



THE IMPERIAL ENCYCLOPEDIA AND DICTIONARY 258

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THE ENGLISH LANGUAGE
UNDER ONE ALPHABET

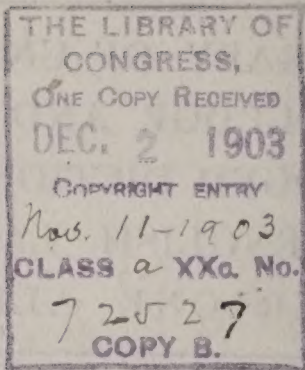
IN FORTY VOLUMES

VOLUME 18

HAMERLING—HOME

NEW YORK HENRY G. ALLEN & COMPANY

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I 34



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SCHEME OF SOUND SYMBOLS

FOR THE PRONUNCIATION OF WORDS.

Note.—(·) is the mark dividing words respelt phonetically into syllables; ('), the accent indicating on which syllable or syllables the accent or stress of the voice is to be placed.

Sound-symbols employed in Respelling.	Representing the Sounds as exemplified in the Words.	Words respelt with Sound-symbols and Marks for Pronunciation.
ā	mate, fate, fail, aye	māt, fāt, fāl, ā.
ă	mat, fat	măt, făt.
á	far, calm, father	fār, kām, fā'thēr.
ă	care, fair	cār, fār.
aw	fall, laud, law	fawl, lawd, law.
ē	mete, meat, feet, free	mēt, mēt, fēt, frē.
ě	met, bed	mět, bēd.
é	her, stir, heard, cur	hēr, stēr, hērd, kēr.
ī	pine, ply, height	pīn, plī, hīt.
ĩ	pin, nymph, ability	pīn, nĩmf, ă-bĩl'ĩ-tĩ.
ō	note, toll, soul	nōt, tōl, sōl.
ǒ	not, plot	nōt, plōt.
ó	move, smooth	mōv, smōth.
ō	Goethe (similar to e in her)	gō teh.
ow	noun, bough, cow	noun, bow, kow.
oy	boy, boil	boy, boyl.
ū	pure, dew, few	pūr, dū, fū.
ǔ	bud, come, tough	būd, kūm, tūf.
ú	full, push, good	fúl, púsh, gúd.
ü	French plume, Scotch guid	plüm, güd.
ch	chair, match	chär, mäch.
ch	German buch, Heidelberg, Scotch loch (guttural)	böch, hĩ'del-bērçh, löch.
g	game, go, gun	gām, gō, gūn.
j	judge, gem, gin	jűj, jēm, jīn.
k	king, cat, cot, cut	kīng, kūt, kōt, kūt.
s	sit, scene, cell, city, cypress	sīt, sēn, sēl, sīt'ĩ, sĩ'prēa.
sh	shun, ambition	shűn, ăm-bĩsh'űn.
th	thing, breath	thīng, brēth.
th	though, breathe	thō, brēth.
z	zeal, maze, muse	zēl, māz, mūz.
zh	azure, vision	ăzh'er, vűzh'űn.

ABBREVIATIONS USED IN THIS WORK.

a., or adj.....adjective
A.B......Bachelor of Arts
abbr......abbreviation, abbreviated
abl. or abla.ablative
Abp......Archbishop
abt......about
Acad......Academy
acc. or ac.accusative
accom......accommodated, accommodation
act......active
A.D......in the year of our Lord [*Anno Domini*]
Adj'tAdjutant
AdmAdmiral
adv. or ad.adverb
A. F......Anglo-French
Ag......Silver [*Argentum*]
agri......agriculture
A. L......Anglo-Latin
Al......Aluminium
Ala......Alabama
Alb......Albanian
alg......algebra
A.M......before noon [*ante meridiem*]
A.M.Master of Arts
Am......Amos
Amer......America, -n
anat......anatomy, anatomical
anc......ancient, anciently
A.N.M.in the year of the world [*Anno Mundi*]
anon......anonymous
antiq......antiquity, antiquities
aor......aorist, -ic
app......appendix
appar......apparently
Apr......April
Ar......Arabic
arch......architecture
archæol....archæology
arith......arithmetic
Ariz......Arizona
Ark......Arkansas
art......article
artil......artillery
AS......Anglo-Saxon
As......Arsenic
Assoc......Association
asst......assistant
astrol......astrology
astron....astronomy
attrib......attributive
atty......attorney
at. wt......atomic weight
Au......Gold [*Aurum*]

A.U.C......in the year of the building of the city (Rome) [*Annourbis conditæ*]
Aug......August
aug......augmentative
Aust......Austrian
A. V......authorized version [of Bible, 1611]
avoir......avoir dupois
B......Boron
B......Britannic
b......born
BaBarium
Bart......Baronet
Bav......Bavarian
bl.; bbl....barrel; barrels
B.C......before Christ
B.C.L......Bachelor of Civil Law
B.D......Bachelor of Divinity
bef......before
Belg......Belgic
Beng......Bengali
Bi......Bismuth
biog......biography, biographical
biol......biology
B.L......Bachelor of Laws
Bohem....Bohemian
bot......botany, botanical
BpBishop
Br......Bromine
Braz......Brazilian
Bret......Breton
Brig......Brigadier
Brit......British, Britannica
bro......brother
Bulg......Bulgarian
bush......bushel, bushels
C......Carbon
c......century
CaCalcium
Cal......California
Camb......Cambridge
Can......Canada
Cant......Canterbury
cap......capital
Capt......Captain
Card ... Cardinal
carp......carpentry
Cath......Catholic
caus......causative
cav......cavalry
Cd......Cadmium
CeCerium
Celt......Celtic
cent......central
cf......compare [*confer*]
ch or chh....church

ABBREVIATIONS.

Chal.....	Chaldee	diff.....	different, difference
chap.....	chapter	dim.....	diminutive
chem.....	chemistry, chemical	dist	district
Chin.....	Chinese	distrib... ..	distributive
Chron.....	Chronicles	div.....	division
chron.....	chronology	doz.....	dozen
Cl.....	Chlorine	Dr.....	Doctor
Class.....	Classical [= Greek and Latin]	dr.....	dram, drams
Co.....	Cobalt	dram.....	dramatic
Co.....	Company	Dut. or D....	Dutch
co.....	county	dwt	pennyweight
cog.....	cognate [with]	dynam or	
Col.....	Colonel	dyn.....	dynamics
Col.....	Colossians	E.....	Erbium
Coll.....	College	E. or e.....	East, -ern, -ward
colloq.....	colloquial	E. or Eng..	English
Colo.....	Colorado	Eccl.....	Ecclesiastes
Com.....	Commodore	eccl. or	} ecclesiastical [af-
com.....	commerce, commercial	eccles....	
com.....	common	ed	edited, edition, editor
comp.....	compare	e.g.....	for example [ex gratia]
comp	composition, compound	E. Ind. or {	East Indies, East
compar....	comparative	E. I.....	
conch.....	conchology	elect.....	electricity
cong.....	congress	Emp... ..	Emperor
Congl.....	Congregational	Encyc.....	Encyclopedia
conj	conjunction	Eng. or E..	English
Conn or Ct.	Connecticut	engin.....	engineering
contr.....	contraction, contracted	entom	entomology
Cop.....	Coptic	env. ext....	envoy extraordinary
Cor.....	Corinthians	ep.....	epistle
Corn.....	Cornish	Eph	Ephesians
corr.....	corresponding	Episc	Epi-copal
Cr	Chromium	eq. or =....	equal, equals
crystal....	crystallography	equiv.....	equivalent
Cs	Cæsium	esp.....	especially
ct.....	cent	Est	Esther
Ct. or Conn.	Connecticut	estab.....	established
Cu.....	Copper [Cuprum]	Esthon.....	Esthonian
cwt	a hundred weight	etc.....	and others like [et cetera]
Cyc.....	Cyclopedia	Eth.....	Ethiopic
D.....	Didymium	ethnog.....	ethnography
D. or Dut..	Dutch	ethnol.....	ethnology
d.....	died	et seq.....	and the following [et sequentia]
d. [l. s. d.]	penny, pence	etym.....	etymology
Dan.....	Daniel	Eur.....	European
Dan.....	Danish	Ex.....	Exodus
dat	dative	exclam.....	exclamation
dau.....	daughter	Ezek.....	Ezekiel
D. C.....	District of Columbia	Ezr.....	Ezra
D.C.L.....	Doctor of Civil [or Common] Law	F.....	Fluorine
D.D.....	Doctor of Divinity	F. or Fahr.	Fahrenheit
Dec.....	December	f. or fem...	feminine
dec.....	declension	F. or Fr....	French
def.....	definite, definition	fa.....	father
deg.....	degree, degrees	Fahr. or F.	Fahrenheit
Del.....	Delaware	far.....	farriery
del.....	delegate, delegates	Fe.....	Iron [Ferrum]
dem.....	democratic	Feb.....	February
dep.	deputy	fem or f. .	feminine
dep.....	deponent	fig.....	figure, figuratively
dept.....	department	Fin.....	Finnish
deriv.....	derivation, derivative	F.—L.....	French from Latin
Deut.....	Deuteronomy	Fla.....	Florida
dial.....	dialect, dialectal	Flem.....	Flemish
diam... ..	diameter	for.....	foreign
Dic.....	Dictionary	fort.....	fortification
		Fr. or F....	French
		fr.....	from

ABBREVIATIONS.

freq.....frequentative
FrisFrisian
ft.....foot, feet
fut.....future
G. or Ger...German
G.....Glucinium
Ga.....Gallium
Ga.....Georgia
Gael.....Gaelic
Gal.....Galatians
gal.....gallon
galv.....galvanism, galvanic
gard.....gardening
gen.....gender
Gen.....General
GenGenesis
gen.....genitive
Geno.....Genoes
geoggeography
geol.....geology
geom.....geometry
Ger.....German, Germany
Goth.....Gothic
Gov.....Governor
govt.....government
Gr.....Grand, Great
Gr.....Greek
gr.....grain, grains
gramgrammar
Gr. Brit...Great Britain
Gris.....Grisons
gungunnery
H.....Hegira
H.....Hydrogen
h.....hour, hours
Hab.....Habakkuk
Hag.....Haggai
H. B. M....His [or Her] Britan-
 nic Majesty
Heb.....Hebrew, Hebrews
her.....heraldry
herpet.....herpetology
Hg.....Mercury [*Hydrar-*
 gyrum]
hhd.....hogshead, hogsheads
Hind.....Hindustani, Hindu,
 or Hindi
hist.....history, historical
HonHonorable
hort.....horticulture
Hos.....Hosea
Hung.....Hungarian
Hydros...Hydrostatics
I.....Iodine
I; Is.....Island; Islands
Icel.....Icelandic
ichth.....ichthyology
Ida.....Idaho
i.e......that is [*id est*]
Ill.....Illinois
illus.....illustration
impera or
 impr.....imperative
impers.....impersonal
impf or imp imperfect
impf. p. or
 impimperfect participle
improp.....improperly
In.....Indium
in.....inch, inches
incept.....inceptive
Ind.....India, Indian
IndIndiana

ind.....indicative
indefindefinite
Indo-Eur...Indo-European
inf.....infantry
inf or infin infinitive
instr.....instrument, -al
int.....interest
intens.....intensive
interj. or
 int.....interjection
interrog...interrogative **pro-**
 noun
intr. or
 intrans...intransitive
Io.....Iowa
Ir.....Iridium
Ir.....Irish
Iran.....Iranian
irr.....irregular, -ly
Is.....Isaiah
It.....Italian
Jan.....January
Jap.....Japanese
Jas.....James
Jer.....Jeremiah
Jn.....John
Josh.....Joshua
Jr.....Junior
JudgJudges
K.....Potassium [*Kalium*]
K.....Kings [in Bible]
K.....king
Kan.....Kansas
Kt.....Knight
Ky.....Kentucky
L.....Latin
L.....Lithium
l. [l. s. d.], } pound, pounds
 or £..... } [sterling]
La.....Lanthanum
La.....Louisiana
Lam.....Lamentations
Lang.....Languedoc
lang... ..language
Lap.....Lapland
latlatitude
lb.; llb. or } pound; pounds
 lbs..... } [weight]
Let.....Lettish
LevLeviticus
LG.....Low German
L.H.D......Doctor of Polite Lit-
 erature
Lieut.....Lieutenant
LimLimousin
LinLinnæus, Linnæan
litliteral, -ly
litliterature
Lith.....Lithuanian
lithog.....lithograph, -y
LL.....Late Latin, Low
 Latin
LL.D......Doctor of Laws
long.....longitude
Luth.....Lutheran
M.....Middle
M.Monsieur
m.....mile, miles
m. or masc. masculine
M.A......Master of Arts
MaccMaccabees
mach... ..machinery
Mag.....Magazine

ABBREVIATIONS.

Maj.....Major	N. A., or
Mal.....Malachi	N. Amer. North America, -n
Mal.....Malay, Malayan	nat.....natural
manuf.....manufacturing, manufacturers	naut.....nautical
Mar.....March	nav.....navigation, naval af- fairs
masc or m. masculine	Nb.....Niobium
Mass.....Massachusetts	N. C. or
math.....mathematics, math- ematical	N. Car... North Carolina
Matt.....Matthew	N. D.....North Dakota
M.D.....Doctor of Medicine	Neb.....Nebraska
MD.....Middle Dutch	neg.....negative
Md.....Maryland	Neh.....Nehemiah
ME.....Middle English, or Old English	N. Eng.... New England
Me.....Maine	neut or n...neuter
mech.....mechanics, mechan- ical	Nev.....Nevada
med.....medicine, medical	N.Gr.....New Greek, Modern Greek
mem.....member	N. H.....New Hampshire
mensur... mensuration	NHG.....New High German [German]
Messrs. or	Ni... Nickel
MM.....Gentlemen, Sirs	N. J.....New Jersey
metal.....metallurgy	NL.....New Latin, Modern Latin
metaph... metaphysics, meta- physical	N. Mex.... New Mexico
meteor.... meteorology	N. T. or
Meth.....Methodist	N. Test... New Testament
Mex.....Mexican	N. Y.....New York [State]
Mg.....Magnesium	nom.....nominative
M.Gr.....Middle Greek	Norm. F... Norman French
MHG.....Middle High Ger- man	North. E... Northern English
Mic.....Micah	Norw.... Norwegian, Norse
Mich.....Michigan	Nov.....November
mid.....middle [voice]	Num.....Numbers
Milan.....Milanese	numis.... numismatics
mid. L. or } Middle Latin, Me-	O.....Ohio
ML..... } diæval Latin	O.....Old
milit. or	O.....Oxygen
mil.... military [affairs]	Obad.....Obadiah
min.....minute, minutes	obj.....objective
mineral... mineralogy	obs. or †...obsolete
Minn.....Minnesota	obsoles...obsolescent
Min. Plen. Minister Plenipoten- tiary	O.Bulg.... Old Bulgarian or Old Slavic
Miss.....Mississippi	Oct.....October
ML. or } Middle Latin, Me-	Odontog...odontography
mid. L... } diæval Latin	OE.....Old English
MLG.....Middle Low German.	OF or
Mile.....Mademoiselle	O. Fr.... Old French
Mme.....Madam	OHG.....Old High German
Mn.....Manganese	Ont.....Ontario
Mo.....Missouri	opt... optics, optical
Mo.....Molybdenum	Or.....Oregon
mod.....modern	ord.....order
Mont.....Montana	ord.... ordnance
Mr.....Master [Mister]	org.....organic
Mrs.....Mistress [Missis]	orig.....original, -ly
MS.; MSS. manuscript; manu- scripts	ornith.... ornithology
Mt.....Mount, mountain	Os.....Osmium
mus.....music	OS. Old Saxon
mus.doc... Doctor of Music	O. T., or
myth.....mythology, mytho- logical	O. Test... Old Testament
N.....Nitrogen	Oxf.....Oxford
N. or n.... North, -ern, -ward	oz.....ounce, ounces
n.....noun	P.....Phosphorus
n or neut...neuter	p.; pp....page; pages
Na.....Sodium [Natrium]	p., or part..participle
Nah.....Nahum	Pa. or Penn. Pennsylvania
	paint... painting
	palæon... palæontology
	parl.....parliament
	pass.....passive

ABBREVIATIONS.

pathol or
 path.....pathology
 Pb.....Lead [*Plumbum*]
 Pd.....Palladium
 Penn or Pa. Pennsylvania
 perf.....perfect
 perh.....perhaps
 Pers.....Persian, Persic
 pers.....person
 persp.....perspective
 pert.....pertaining [to]
 Pet.....Peter
 Pg. or Port. Portuguese
 phar.....pharmacy
 PH.D.....Doctor of Philoso-
 phy
 Phen.....Phenician
 Phil.....Philippians
 Philem.....Philemon
 philol.....philology, philologi-
 cal
 philos. { philosophy, philo-
 or phil... } sophical
 phenog.....phonography
 photog.....photography
 phren.....phrenology
 phys.....physics, physical
 physiol.....physiology, physi-
 ological
 Pied.....Piedmontese
 Pl.....Plate
 pl. or plu...plural
 Pl. D.....Platt Deutsch
 plupf.....pluperfect
 P.M.....afternoon [*post meri-*
 diem]
 pneum.....pneumatics
 P. O.....Post-office
 poet.....poetical
 Pol.....Polish
 pol econ...political economy
 polit.....politics, political
 pop.....population
 Port. or Pg. Portuguese
 poss.....possessive
 pp.....pages
 pp.....past participle, per-
 fect participle
 p. pr.....present participle
 Pr. or Prov. Provengal
 pref.....prefix
 prep.....preposition
 Pres.....President
 pres.....present
 Presb.....Presbyterian
 pret.....preterit
 prim.....primitive
 priv.....privative
 prob.....probably, probable
 Prof.....Professor
 pron.....pronoun
 pron.....pronunciation, pro-
 nounced
 prop.....properly
 pros.....prosody
 Prot.....Protestant
 Prov. or Pr. Provengal
 Prov.....Proverbs
 prov.....province, provincial
 Prov. Eng. Provincial English
 Prus.....Prussia, -n
 Ps.....Psalm, Psalms
 psychol.....psychology

pt.....past tense
 pt.....pint
 Pt.....Platinum
 pub.....published, publisher,
 publication
 pwt.....penny weight
 Q.....Quebec
 qt.....quart
 qtr.....quarter [weight]
 qu.....query
 q.v.....which see [*quod*
 vide]
 R.....Rhodium
 R.....River
 Rb.....Rubidium
 R. Cath....Roman Catholic
 rec. sec....recording secretary
 Ref.....Reformed
 refl.....reflex
 reg.....regular, -ly
 regt.....regiment
 rel. pro. or
 rel.....relative pronoun
 repr.....representing
 repub.....republican
 Rev.....Revelation
 Rev.....The Reverend
 Rev. V.....Revised Version
 rhet.....rhetoric, -al
 R. I.....Rhode Island
 R. N.....Royal Navy
 Rom.....Roman, Romans
 Rom.....Romanic or Ro-
 mance
 Rom. Cath. { Roman Catholic
 Ch. or R. }
 C. Ch.... } Church
 r.r.....railroad
 Rt. Rev...Right Reverend
 Ru.....Ruthenium
 Russ.....Russian
 r.w.....railway
 S.....Saxon
 S.....Sulphur
 s.....second, seconds
 s. [l. s. d.]..shilling, shillings
 S. or s.....South, -ern, -ward
 S. A. or
 S. Amer..South America, -n
 Sam.....Samaritan
 Sam.....Samuel
 Sans, or
 Skr.....Sanskrit
 Sb.....Antimony [*Stibium*]
 s.c.....understand, supply,
 namely [*scilicet*]
 S. C. or
 S. Car....South Carolina
 Scand.....Scandinavian
 Scot.....Scotland, Scotch
 scr.....scruple, scruples
 Scrip.....Scripture [s], Scrip-
 tural
 sculp.....sculpture
 S. D.....South Dakota
 Se.....Selenium
 sec.....secretary
 sec.....section
 Sem.....Semitic
 Sep.....September
 Serv.....Servian
 Shaks.....Shakespeare
 Si.....Silicon

ABBREVIATIONS.

Sic.....	Sicilian	trigon.....	trigonometry
sing.....	singular	Turk.....	Turkish
sis.....	sister	typog.....	typography, typo
Skr. or			graphical
Sans.....	Sanskrit	U.....	Uranium
Slav.....	Slavonic, Slavic	ult.....	ultimate, -ly
Sn.....	Tin [<i>Stannum</i>]	Unit.....	Unitarian
Soc.....	Society	Univ.....	Universalist
Song Sol...	Song of Solomon	Univ.....	University
Sp.....	Spanish	U. Presb...	United Presbyterian
sp. gr.....	specific gravity	U. S... ..	United States
sq.....	square	U. S. A....	United States Army
Sr.....	Senior	U. S. N....	United States Navy
Sr.....	Strontium	Ut.....	Utah
St.: Ste....	Saint	V.....	Vanadium
St.	street	v.....	verb
stat.....	statute	Va.....	Virginia
S.T.D.....	Doctor of Sacred Theology	var.....	variant [word]
subj.....	subjunctive	var.....	variety of [species]
suf.....	suffix	Ven.....	Venerable
Su. Goth...	Suo-Gothic	Venet.....	Venetian
superl.....	superlative	vet.....	veterinary
Supp.....	Supplement	v. i. or	
Supt	Superintendent	v. intr....	verb intransitive
surg.....	surgery, surgical	vil.....	village
Surv.....	surveying	viz.....	namely, to-wit [<i>vide-</i> <i>licet</i>]
Sw.....	Swedish	v. n.....	verb neuter
Swab.....	Swabian	voc.....	vocative
sym.....	symbol	vol.....	volume
syn.....	synonym, -y	vols.....	volunteers
Syr.....	Syriac, Syrian	Vt.....	Vermont
t	town	v. tr.....	verb transitive
Ta... ..	Tantalum	W.....	Tungsten [<i>Wolfram</i>]
Tart.....	Tartar	W.....	Welsh
Te.....	Tellurium	W. or w....	West, -ern, -ward
technol....	technology	Wal.....	Walachian
teleg.....	telegraphy	Wall.....	Walloon
Tenn.....	Tennessee	Wash.....	Washington
term.....	termination	Westph....	Westphalia, -n
terr.....	territory	W. Ind. }	West Indies, West
Teut.....	Teutonic	or W. I... }	Indian
Tex.....	Texas	Wis.....	Wisconsin
Th.....	Thorium	wt.....	weight
theat.....	theatrical	W. Va.....	West Virginia
theol.....	theology, theological	Wyo.....	Wyoming
therap.....	therapeutics	Y.....	Yttrium
Thess.....	Thessalonians	yd.....	yard
Ti.....	Titanium	yr.....	year
Tim.....	Timothy	Zech.....	Zechariah
Tit.....	Titus	Zeph.....	Zephaniah
Tl.....	Thallium	Zn.....	Zinc
toxicol....	toxicology	zool.....	zoology, zoological
tp.....	township	Zr.....	Zirconium
tr. or trans.	transitive		
transl.....	translation, trans- lated		

See also ABBREVIATIONS: in Vol. I.

IMPERIAL ENCYCLOPEDIA AND DICTIONARY.

HAMERLING, *há'mér-ling*, **ROBERT**: poet: b. Kirchberg, Austria, 1830, Mar. 24. He received a classical education in the gymnasium at Vienna, and graduated at the univ. there; became a chorister, then student of medicine, philology, and philosophy; was appointed a prof. at the Trieste Gymnasium 1855; retired on a govt. pension 1866; and subsequently lived near Graetz. His first work that attracted attention was *Amorous Reveries and Chants* (1859, 75); this was followed by *Little Poems* (1862, 73); *Venus in Exile*, symphony; *Ahasuerus in Rome*, epic (1866, 75); *The King of Zion* (1868, 74) *Danton and Robespierre*, tragedy (1871); and *Aspasía*, romance of the time of Pericles (1876). He d. 1889, July 13.

HAMERTON, *hām'ér-ton*, **PHILIP GILBERT**: landscape painter and author: b. Laneside, Lancashire, England, 1834, Sep. 10. He received a grammar-school education, and was prepared for Oxford Univ., but a taste for the fine arts led him to study landscape painting; and a later taste for literature made him better known as an author than as a painter. He spent the greater part of his life in Scotland and France; was art critic of the *Saturday Review* 1866-68; contributed to the *Fine Arts Quarterly Review* and the *Fortnightly Review*; started *The Portfolio*, 1869; was elected an hon. member of the Soc. of Painter-Etchers; and received the univ. decoration of *Officier d'Académie* from the French govt. 1882. His published works include: *Observations on Heraldry* (1851); *The Isles of Loch Awe, and Other Poems* (1855); *Painter's Camp in the Highlands* (1862); *Thoughts About Art* (1862); *Etching and Etchers* (1868); *Contemporary French Painters* (1868); *Painting in France after the Decline of Classicism* (1868); *Wenderholme*, novel (1869); *The Unknown River* (1870); *The Intellectual Life* (1873); *Round my House* (1876); *Marmorne*, anonymous novel (1878); *Modern Frenchmen* (1878); and *Landscape*, beautifully illustrated (1885). He d. 1894, Nov. 5.

HAMES, n. plu. *hāmz*, or **HAUMS**, n. plu. *hawmz*, and **HEAMS**, n. plu. *hēmz* [Wal, *hène*, a splint or thin piece of

HAMESUCKEN—HAMILCAR BARCA.

wood: Flem. *haem*, a horse-collar: OF. *eschames*, laths, shingles]: the two long pieces of wood or iron put on each side of the collar which surrounds the neck of a working horse or ox, having the ends projecting upward beyond the collar, and having the traces fastened to them.

HAMESUCKEN, or HAMSUCKEN, n. *hām'sūk-n* [mid. L. *hamsocam*, forcible entry into a house: Icel. *heimr*; Scot. *hame*, home, and Goth. *sokjan*; Ger. *suchen*, to seek: Icel. *heimsókn*, an assault in one's home: Goth. *hemsokn*; Ger. *heimsuchen*, to visit, to invade violently]: in *Scots law*, the crime of assaulting a person within his own house.

HAMI, *há-mē'*, or KAMIL, *ká-mēl'*, or KOMUL, *ko-mól'*, or KAMIL, *ká-mól'*: important town in central Asia, on the s. slope of the Tian-Shan Mts., on the n. border of the Great Gobi desert: lat. 42° 48' n., and long. 93° 28' e. Its height above sea-level is 3,150 ft. At the beginning of the 17th c., it was under the sway of the king of Kashgar, was under Chinese rule 1720; and has since been in their possession except during a few years of rebellion. The region is exceedingly fertile; and the location is on what will probably be come the great island route of traffic between China and Europe.

HAMILCAR BARCA, *ha-mīl'kār bār'ka*: most distinguished of Carthaginian generals and statesmen, next to his son Hannibal: d. B.C. 228. His surname Barca is the same as Heb. Barak, i.e. 'lightning.' While very young he was appointed to the command of the Carthaginian forces in Sicily, B.C. 247, at which time the Romans had possession of almost all the island. H.'s first care was to discipline his infantry thoroughly; he then established himself on Mount Ercte (now *Pellegrino*, near Palermo), and from this point made pillaging excursions in all directions, sending his privateers along the coast of Italy as far n. as Cumæ, thus obtaining abundant supplies for his troops. From this position the Romans endeavored to dislodge him, but in vain. After three years he left Ercte, and established himself on Mount Eryx, keeping up his communication with Drepanum and the sea, where the same tactics were repeated on both sides, and with the same want of success on the part of the Romans. But the Carthaginian admiral having been totally defeated off the Ægates Islands, B.C. 241, H. was compelled to abandon his fortress, and evacuate Sicily. While H. was engaged in Sicily, he had made large promises to his mercenary troops, which he was unable to perform; they revolted in consequence, and were joined by some of the African tribes. Hanno endeavored to suppress the revolt, but failed; H. was accordingly appointed to the command, and utterly defeated the rebels, capturing all their towns, and putting to death their leaders. H. was next appointed commander-in-chief of the Carthaginian army, and was engaged for some time in wars with the neighboring tribes, which were abruptly ended by H.'s entering upon his Spanish campaign in (probably) B.C. 236. His great aim was to found a new empire in Spain, from which as his

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basis, he might assail the Romans. Thus he aimed to increase the power and wealth of his native country, and to atone to her for the loss of Sicily and Sardinia. This his great purpose Hasdrubal and Hannibal, endeavored to accomplish. He marched westward, while the fleet under his son-in-law, Hasdrubal, cruised along the coast; he then crossed over at the Strait of Gibraltar, and made war on the natives of Spain, penetrating to the very heart of the country, subduing many tribes and cities, and seizing immense wealth. He spent nine years in Spain, and at length, B.C. 228, met his death on the field of battle while fighting against the Vettones. His military genius is considered scarcely inferior to that of his son Hannibal.

Hamilcar was the name of several other distinguished Carthaginians, the most celebrated of whom were—1. The commander of the great Sicilian expedition, B.C. 480: 2. One of the commanders of a Carthaginian army, defeated by Timoleon, the Corinthian general, at the Crimissus, B.C. 339: 3. (surnamed Rhodanus), ambassador to Alexander the Great after the fall of Tyre: 4. the governor of Sicily, B.C. 317: 5. the son of Gisco: who succeeded the preceding, and carried on military operations against the Syracusans and other states with great success, but was at length taken prisoner and put to death: 6. A commander during the first Punic War, very successful against the Romans by land in Sicily, but afterward defeated in a sea-fight off Ecnomus, and thereafter recalled to Africa to oppose Regulus.

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HAMILTON, *hām'el-ton*: village in Madison co., N. Y.: on the Chenango canal, and the Utica Clinton and Binghamton railroad; 29 m. s.s.w. of Utica, 37 m. s.e. of Syracuse. It is noted for its educational institutions, which include Madison Univ., H. Theol. Seminary (Bapt.), H. Female Seminary, Colgate Acad., and a union graded school. H. contains 5 churches, handsome park, foundry, and large carriage and wagon-works. Pop. (1870) 1,529; (1880) 1,638; (1890) 1,744; (1900) 1,627.

HAMILTON: city of Butler co., O.; on both banks of the Great Miami river, and on the Miami and Erie canal, and the Cincinnati H. and Dayton railroad; 20 m. n. of Cincinnati, 35 m. s.w. of Dayton. It is a large manufacturing centre in a rich and populous district, has unlimited water-power from river and canal, includes among its industries manufactories of railroad supplies, punches, reapers, mowers, engines, threshers, wood-working machinery, carriages and wagons, boots and shoes, saws, rope, pumps, brooms, candles, boilers, and sash and blinds, beside paper, woolen, and flour-mills, breweries, distilleries, etc. It contains a court-house, 15 churches, 3 national banks, public library, high, grammar, and primary schools, board of trade; paid fire dept., elec. fire-alarm telegraph, 2 parks, 2 daily newspapers. H. received a municipal charter 1853, when the village of Rossville, on w. bank of river, was incorporated with it. Pop. (1870) 11,181; (1880) 12,122; (1890) 17,565; (1900) 23,914.

HAMILTON: parliamentary and municipal burgh, and market-town of Scotland, county of Lanark, beautifully situated on the left bank of the Clyde, in the centre of a finely wooded district, about 11 m. s.e. of Glasgow, with which it is connected by railway. It has a straggling, but pleasant rural appearance. The town contains some fine churches; numerous good schools—of which the Academy and St. John's Grammar School are most important; the county-hall, a noticeable Grecian structure; a new town-hall and extensive cavalry barracks. Many women are employed in *tambouring* for the sewed muslin manufacturers of Glasgow. Pop. (1881) 18,517; (1891) 24,863.

Close to the town is Hamilton Palace, seat of the Duke of Hamilton, with the family mausoleum, in extensive pleasure-grounds bordered by the Clyde. The palace is a noble structure, and contained a magnificent collection of paintings till 1882, when, owing to the improvidence of the duke, they were sent to the hammer. Cadzow Castle and the remains of Cadzow Forest, in which a herd of the famous aboriginal breed of wild cattle are kept, are in the vicinity.

HAMILTON, *hām'el-ton*: city of Canada, province of Ontario, at the w. end of Lake Ontario, or rather of that detached section of it which, under the name of Burlington Bay, is connected with the main body of the lake by the Burlington canal. H. is 45 m. from the Falls of Niagara, 38 m. from Toronto; in the centre of a fine grain producing country; it is also an important centre of the chief

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Canada railways. The mfg. establishments are extensive: The principal are locomotive-works, foundries, and car-works. Pop. (1841) 3,500; (1861) 19,096; (1881) 35,961; (1886) 41,280; (1891) 48,980; (1901) 52,634.

HAMILTON, ALEXANDER: 1757, Jan. 11—1804, July 12; b. Nevis Island, W. Indies: American statesman. His father was a Scotch emigrant, and his mother was of a Huguenot family. His early education was conducted by the Rev. Dr. Hugh Knox, Presb. clergyman of Nevis, and when 13 years old he was placed in a counting-house in Santa Cruz. While so employed he contributed to the local press; and these writings, as well as the force and directness of his business letters, attracted the attention of a number of gentlemen, including Dr. Knox, who provided him with the means to remove to the United States and take a full educational course. He arrived in Boston 1772, Oct., was prepared for college at Elizabethtown, N. J., entered King's (now Columbia) College 1773, and withdrew to give his support with pen and voice to the colonial cause 1774. During the next two years, he won wide repute by his vigorous speeches, and his no less stirring pamphlet and newspaper writings; and when his authorship of *A Full Vindication* and *The Farmer Refuted*—which had been attributed to John Jay and other experienced leaders—was established, the youth of 18 became a power in the patriot movement. In 1776, he was appointed by the New York convention commander of a company of artillery, and showed such high executive qualities, especially at the battles of Long Island and White Plains, that he was commended by Gen. Greene and invited by Washington to become his aide-de-camp with the rank of lieut.col. 1777. He became Washington's chief sec. and confidential executive, and maintained this relation till 1781, Feb. 16, when he resigned from the staff in consequence of the commander's criticism on one of his acts. During the interval he performed many services requiring keen judgment and diplomatic skill, and, after resigning from the staff, retained his army commission, led a corps of light infantry under Lafayette at Yorktown, and greatly distinguished himself by capturing a British redoubt at the head of a picked storming party. On retiring from the army, he began to study finances, the science of government, and law; continued his political letters; urged and planned the establishment of a national banking system; was admitted to the bar; and became continental receiver of taxes for New York. In 1782, he entered congress, but was unable to accomplish any of the reforms that he had at heart, and, after a year's service, retired and resumed the practice of law. He had become convinced that the federative system had outgrown its usefulness, and that a stronger and more centralized form of govt. was needed. He elaborated a scheme of govt. based on his views of the necessities of the period, but found no practical support or indeed encouragement till Va. proposed the Annapolis convention to formulate commercial relations that would be common to all the states 1786. He attended the convention, drew up the address expressive of the views of the delegates

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and calling a new convention to meet in Philadelphia 1787, May 2; and then exerted all his energy to secure a proper representation from his own state. He was elected a member of the legislature, fought a strong opposition to the convention, was appointed a delegate with two associates from the opposition, and in the convention presented his govt. scheme and supported it in a 5-hours' speech. Realizing that his plan could not be adopted, and seeing that his colleagues opposed him at every step, he withdrew from the convention till its closing hours, when he joined in the debates and signed the proposed constitution. Then, stirred to vigorous action by the growing opposition of the Clinton party, he established *The Federalist* (q.v.), wrote 54 of its 85 memorable essays designed to secure the adhesion of N. Y. state to the new constitution, and in the state ratifying convention by an eloquent and skilful argument, changed an adverse vote of two to one to a triumphant majority. On the inauguration of Pres. Washington and the organization of the treas. dept., H. was placed at the head of that important dept. by the personal choice of the pres. as well as the earnest recommendation of Robert Morris, who had been familiar with his views on the national finances since 1781. The wisdom of Washington's selection soon became evident, and a century has added imperishable lustre to H.'s grand financial achievements 1789-95. To summarize the work of those 5 years. He brought order out of the confusion of national and state finances; provided a funding system and elaborated a plan of taxation to sustain it; reported a scheme for the assumption by the federal govt. of the state debts; and submitted special reports, by direction of the pres. or congress on the means of raising and collecting revenue, establishment of a revenue-cutter service, provision of navigation-laws, purchase of West Point for a milit. acad., management of the public lands, creation of a national mint, establishment of a national bank, excise, improved taxation, and extinction of the national debt. During this period he applied his whole energies to the financial interest of the country, and in so doing impoverished himself to an extent that led him to resign 1795 and resume his profession. As sec. of the treas. he naturally was confronted with opposition, but for this he seemed to care little till some of his political enemies attacked his official integrity, when he promptly prepared and published a series of reports giving the fullest details of every public loan and the entire operations of his dept. from its organization. He worked laboriously early and late at his profession, and was credited by Talleyrand with being 'one of the wonders of the world. I have seen a man laboring all night to support his family, who had made the fortune of a nation.' Strong as were his private necessities, his interest in public affairs never flagged, and his advice and co-operation were frequently sought by Washington and others. It is now known that he materially aided Washington in preparing his noted farewell address. After retiring from the treas. dept., he was offered and declined the office of chief-justice of the U. S. supreme court. He supported Adams and Pinckney

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in the presidential canvass 1796, though he had previously incurred the hostility of Adams, and was then considered to be more favorably inclined to the latter. In 1798, when there was prospect of war between France and the United States, it was deemed necessary to reorganize the army. The chief command was conferred on Washington, who accepted it only on the conditions that he should not be called into the field except in case of actual hostilities and that H. should be second in command. Adams resisted this appointment till Washington threatened to resign the command, and H. then became inspector-gen. with the rank of maj.gen. On the death of Washington, H. succeeded him as commander-in-chief, and when he had brought the army into thorough organization and discipline the emergency had passed, and he resumed his law practice. In 1800 he was elected pres.gen. of the order of the Cincinnati, and after the defeat of the federalist party in the presidential election the same year, he advised his friends to support Jefferson rather than Burr when the duty devolved on the house of representatives of deciding which of the two should be pres. He succeeded in accomplishing the defeat of Burr; and from that moment a hostility existed between H. and Burr that neither cared to conceal. H. again returned to his professional work, and did not take an active part in political matters till 1804, when he successfully opposed Burr's candidacy for gov. of N. Y. Burr's defeat exasperated him to challenge H. to a duel for language used in the canvass; and though H. was sturdily opposed to the duelling code, he felt constrained by political reasons to accept. The principals with their seconds met at Weehawken, N. J., 1804, July 11. H. declined to fire at Burr and fell mortally wounded by his adversary's first shot, and died the next day: see BURR, AARON.

HAMILTON, ALLAN McLANE, M.D.: b. Brooklyn, N. Y., 1848, Oct. 6: great-grandson of Gen. PHILIP SCHUYLER and grandson of ALEXANDER H. He graduated at the College of Physicians and Surgeons, New York, 1870; became a health-inspector 1873; was an expert witness in the Guiteau trial and the Jesse Hoyt and Cadet Whittaker cases; has been physician in charge of the N. Y. State Hospital for Diseases of the Nervous System, and visiting physician to the Epileptic and Paralytic Hospital, on Blackwell's Island, N. Y.; has published several works on nervous diseases; and was appointed by Gov. Hill health officer of the port of New York 1889, Apr. 9.

HAMILTON, ANDREW: governor of E. and W. Jersey; b. Scotland; d. Burlington, N. J., 1703, Apr. 20. He was brought up to a mercantile career in Edinburgh; became one of the proprietors of E. Jersey, deputy gov. 1686 and acting gov. 1687; was captured by the French at sea while on his way to London 1689; appointed gov. of E. Jersey with charge of W. Jersey 1692, Mar., and served till 1698; returned to London and was again appointed gov. 1699; served two years and then became deputy gov. of Penn.; and died while holding that office. He organ-

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ized the first postal service in America, under a crown patent 1694.

HAMILTON, ANTHONY, or ANTOINE: 1646-1720, Aug. 6; b. Ireland; descended from the Scottish ducal family of H. After the execution of Charles I., he, with his parents, followed the royal family to France. On the accession of Charles II. 1660, he returned to England, but was excluded from office as being a Rom. Catholic. James II. gave him a regiment of infantry in Ireland, and made him gov. of Limerick; but after the abdication of that monarch, H. returned to France, where he passed the rest of his life, and died at St. Germain-en-Laye. His writings are full of wit and talent, particularly *Contes de Fée* (3 vols. Paris 1805). His *Mémoires de Grammont* is lively and spirited, exhibiting a free and faithful delineation of the court of Charles II. It has been often translated into English. The last edition is that in Bohn's Series, with Scott's notes and illustrations. One of the best editions of his collective works was published by Renouard (3 vols. Paris 1812).

HAMILTON, CHARLES SMITH: manufacturer: b. New York, 1822, Nov. 16; son of JOHN CHURCH H. He graduated at the U. S. Milit. Acad. 1843; served through the Mexican war, was brevetted capt. for gallantry at Contreras and Churubusco and wounded at Molino del Rey; resigned and engaged in farming 1853; became col. of the 3d Wis. vols. and brig gen. of vols. 1861, May, and maj. gen. of vols. 1862, Sep.; commanded a div. at Corinth, the left wing of the army of the Tenn., and the 16th corps; resigned 1863, Apr., and engaged in manufacturing in Fond du Lac, Wis. He was pres. of the board of regents of the Univ. of Wis. 1866-75, and U. S. marshal for the dist. of Wis. 1869-77. He d. 1891, Apr. 17.

HAMILTON, EMMA LYON, Lady: 1764, Apr. 26-1815, Jan. 16; b. Preston, Lancashire, England; second wife of Sir William H. She was the illegitimate child of a servant girl; was employed as child's nurse when 13 years old; removed to London and became a sales clerk when 16; entered the service of a lady of rank; engaged as waiter in a tavern; was mistress for several years of a sea capt., who gave her to a friend, by whom she was deserted in a month; represented *Hygiea* in a quack doctor's show; captivated Charles Greville and bore him 3 children and, when he was forbidden to marry her by his uncle, Sir William H., the nephew transferred her to the uncle in return for the payment of his debts. Sir William married her, introduced her at court, and permitted her to become the mistress of Lord Nelson, by whom she had a daughter Horatia Nelson. She was a beautiful and intriguing woman; brought about a war between England and Spain; and ended her disgraceful career in France, where she died destitute.

HAMILTON, FRANK HASTINGS, M.D., LL.D.: 1814, Sep. 10-1886, Aug. 11; b. Wilmington, Vt.: surgeon. He graduated at Union College 1830 and the medical dept.

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of the Univ. of Penn. 1835; was appointed prof. of surgery in Western College of Physicians and Surgeons 1839, in the Geneva Medical College 1840, and in the Buffalo Medical College—of which he became dean—1846; became surgeon to the Buffalo Charity Hosp., prof. of the principles and practice of surgery and surgeon-in-chief of the Long Island College Hosp. 1859, and prof. of milit. surgery there 1861; had charge of the general field hospital during the first Bull Run battle; was appointed brigade surgeon and medical director 1861; organized the U. S. general hospital in Central Park, New York, 1862; was medical inspector U.S.A. 1863; and in the latter year resigned and resumed duty as prof. of milit. surgery in Bellevue Hosp. Med. College. He was consulting surgeon to several hospitals and city dispensaries till his death, and was consulting surgeon to the staff that attended Pres. Garfield. He was a member of many medical and surgical societies, inventor of numerous surgical instruments, and author of a large number of books, pamphlets, and reports on surgical topics. He received the degree LL.D. from Union College 1869.

HAMILTON, GEORGE FRANCIS, Lord: third son of the Duke of Abercorn; b. Brighton, England, 1845, Dec. He was educated at Harrow, elected member of parliament in Middlesex co. as a conservative 1868, again defeated the liberal candidate 1874; was appointed by Disraeli parliamentary under-sec. of state for India 1874; became vice-pres. of the committee of council on education 1878; was first lord of the admiralty in Lord Salisbury's cabinet 1885, June—1886, Feb.; was called to the same post in the second Salisbury's cabinet 1886; and still (1889, May) holds the office.

HAMILTON, JOHN WILLIAM: an American clergyman; b. in Weston, Va., 1845, March 18; was graduated at Mt. Union College, O., 1865; and Boston University, 1871; admitted to the Pittsburg Conference of the Methodist Episcopal Church in 1868; transferred to the New England Conference in the same year; was founder and for nine years pastor of the People's Church, Boston; fraternal delegate to churches in Ireland and England in 1898; corresponding secretary of the Freedmen's Aid and Southern Education Society, 1892-1900; and became bishop of the Methodist Episcopal church 1900, May. He was the author of *Memorial of Jesse Lee and the Old Elm*; *Lives of the Methodist Bishops*; *People's Church Pulpit*; *American Fraternal Greetings*, etc., and editor of *The Christian Educator*.

HAMILTON, PATRICK: one of the most prominent precursors of the Scottish Reformation: 1504-1528, Feb. 29; b. prob. Glasgow; younger son of Sir Patrick Hamilton of Kincavel and Stanehouse, and Catherine Stewart, daughter of Alexander, Duke of Albany, second son of King James II. He was educated at the Univ. of Paris, where he took his degree 1520, after which he proceeded to Louvain, and thence removed to Basel 1521.

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H. settled in St. Andrews 1523, quietly pursued his theological studies, and did not as yet venture to put himself forward as a reformer. But gradually his convictions matured. From agreeing with Erasmus, he came to agree with Luther; and about 1526, he appears to have announced his new views in such a manner as to draw the notice of Abp. Beaton. Early in 1527, Beaton made 'inquisition' into the grounds of the rumor against him, and found that he was 'infamed with being disputing, holding, and maintaining diverse heresies of Martin Luther and his followers, repugnant to the faith,' and thereupon proceeded to 'desire' him to be formally summoned and put to trial. In the following year, he carried out his summons by a professed trial and conviction, declaring him worthy of death. In the mean time, H. had fled to Germany, where he became familiar with Luther and Melancthon. The Protestant education of H. was in this manner very complete.

After a residence of six months, H. returned to his native country. He repaired to the family mansion at Kincavel, and there, in the neighborhood of Linlithgow, openly preached the gospel. What is more remarkable, he is supposed, during this brief period of quiet and retirement at Kincavel, to have married. It is somewhat strange that, following such an event, he should have been induced to quit his retirement, where he was in comparative safety, and proceed to St. Andrews. Beaton, however, contrived to allure him within his grasp. He 'travailed with the said Mr. Patrick,' Knox says, 'that he got him to St. Andrews.' Hopes seem to have been held out of some good being effected by a conference with him as to the state of the church, and its need of reformation; for 'reformation' of some kind was a common talk at this time in the church, and many plans for it were considered, and some attempted. H. arrived at St. Andrews 1528, Jan., and took up his abode in a lodging provided for him by the archbishop. A conference was held, in which his opponents showed a conciliatory spirit, and even to some extent expressed concurrence in his views. No advantage appears to have been taken of his former summons and condemnation. He was allowed openly, for some time, to promulgate his sentiments in the city and university. With all visitors he freely conversed, and, among them, with Alexander Alane or Alesius, at this time one of the canons in the priory, and with Alexander Campbell, one of the Dominican friars, 'a young man of good wit and learning,' suborned, it is alleged, by Beaton, to entrap him into avowals of heretical opinion. After a month or so (*plus minus mensem*, says Alesius), he was summoned to answer before Beaton to a charge of heresy. The trial took place Feb. 29; and the result, in spite of his luminous and unanswerable argument, was that he was condemned for diverse heresies and 'detestable opinions,' deprived of all dignities and benefices in the church, and delivered over to the secular power to be punished. The sentence was executed without delay. The warrant of the secular power must have been already secured, for on the very same day

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on the morning of which he was tried, H. was consigned to the stake in front of the gate of St. Salvador's College. He died as he had lived—a humble, heroic man. His death probably did more to extend the Reformation in Scotland than even his life could have done. The 'reik of Mr. Patrick Hamilton,' said one of Beaton's own retainers, 'has infected as many as it did blow upon.'

HAMILTON, SCHUYLER: soldier: b. New York, 1822, July 25: grandson of Alexander H. and great-grandson of Gen. Philip Schuyler. He graduated at the U. S. Milit. Acad. 1841, became assistant instructor of tactics there; served through the Mexican war, and was brevetted for gallantry at Monterey and Mil Flores; was aide-de-camp to Gen. Scott 1847-54, held staff appointments under Gens. Butler, Scott, and Halleck early in the civil war; was commissioned brig.gen. of vols. 1861, Nov. 12, and promoted maj.gen. 1862, Sep. 17; commanded the dept. of St. Louis, a div. at Island No. 10, and New Madrid, and the reserves at the battle of Farmington; and resigned, from ill-health, 1863, Feb. 27. He was hydrographic engineer for the dept. of docks, New York, 1871-75. He published *History of the National Flag of the United States* (1852).

HAMILTON, THE FAMILY OF: great historical family in Scotland, known to be of English origin, though when or how it took root in Scotland is not known. Some genealogists have sought to trace its lineage to Robert, surnamed Blanchmains, third Earl of Leicester, who died 1190. This lacks proof, though there is in it nothing improbable: the earl's second son was Bp. of St. Andrews; he had other relations beyond the Tweed; and the cinquefoil on a bloody shield, the heraldic bearing of his house, seems from an early period to have been the heraldic bearing of the Scottish Hamiltons. The name of the family, obviously territorial, was doubtless taken from some one of the many English manors called Hamilton. In the 17th c., the Leicestershire Hamilton—a petty manor in the parish of Barkby, containing only a shepherd's cottage—was shown as the cradle of the house. Several persons of the name appear both in English and in Scottish records about the middle of the 13th c., and one of them seems to have held the Yorkshire manor of Hamilton, together with lands in the parish of Oxnam in Scotland. But the pedigree of the family cannot be carried back beyond (1), *Walter Fitz-Gilbert* (or *Gilbertson*) of *Himilton*, who, 1296, held lands in Lanarkshire, and swore fealty to King Edward I. of England as Overlord of Scotland, and 1314 held the castle of Bothwell, on the Clyde, for the English. His early surrender of this fortress, and of the English knights and nobles who had fled to it from the field of Bannockburn, was rewarded by King Robert Bruce by grants of the lands and baronies of Cadyow and Machan-shire in Clydesdale, Kinneil and Larbert in W. Lothian, Kirkinner and Kirkowen in Galloway, and other lands forfeited by the Cumyns and other adherents of England. He attained knighthood, and left two sons. His elder son

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(2), *Sir David Fitz-Walter Fitz-Gilbert*, or 'Sir David Fitz-Walter,' or 'Sir David of Hamilton,' was taken prisoner by the English at the battle of Neville's Cross 1346, founded a chantry in the cathedral of Glasgow 1361, and appears among the barons in the Scottish parliaments of 1368, 71, and 73. His eldest son (3), *Sir David of Hamilton of Cadyow*, died before 1392, leaving five sons and a daughter. The eldest son (4), *Sir John of Hamilton of Cadyow*, married Janet, daughter of Sir James of Douglas of Dalkeith, by whom he was father of (5), *Sir James of Hamilton of Cadyow*, who, about 1422, married Janet, daughter of Alexander of Livingston of Callander, by whom he had (6), *Sir James of Hamilton of Cadyow*, and four other sons.

LORDS HAMILTON, EARLS OF ARRAN, DUKES OF CHATELHERAULT, MARQUISES OF HAMILTON, DUKES OF HAMILTON, DUKES OF BRANDON, ETC.—Hitherto the family had been only knightly. It was ennobled in its sixth generation, in *Sir James of Hamilton of Cadyow*, who, 1445, was created *Lord Hamilton* by a charter which erected his manor place of 'the Orchard,' in the barony of Cadyow, into his chief messuage, and gave it the name of Hamilton, which it still bears. In 1460, he founded a college in the Univ. of Glasgow—the first college in Scotland founded by a layman. Allied both by marriage and by descent to the Douglasses, he followed their banner in the beginning of their great struggle with the crown. But he forsook them at a critical moment in 1454, and his seasonable loyalty was rewarded by large grants of their forfeited lands, and, at a later period, when he must have been well advanced in years, by the hand of the Princess Mary, eldest daughter of King James II., and widow or divorced wife of Thomas Boyd, the attainted Earl of Arran. Lord Hamilton survived his marriage only five years, dying 1479. His only son, *James, second Lord Hamilton*, was, 1503, made *Earl of Arran*, and had a grant of that island, the dowry of his mother on her first marriage. After taking an important part in public affairs during the minority of King James V., he died 1529, being succeeded by the eldest son of his third wife (niece of Cardinal Beaton), *James, third Lord Hamilton*, second Earl of Arran. The death of King James V., 1542, left only an infant of five days old between him and the throne. He was at once chosen regent of the kingdom and tutor to the young queen, and declared to be 'second person in the realm'—a position which carried with it something of royal style. He signed or superscribed his name as 'James G.,' or simply 'James,' and wrote himself 'James, by the grace of God, Earl of Arran and Lord Hamilton, Governor and Prince of Scotland.' He held his high offices till 1554, when he resigned them in favor of the queen-mother, Mary of Guise, receiving in return, from King Henry II. of France, a grant of the duchy of Chatelherault. His nearness to the throne, his great following and large possessions, left him still a person of such mark that his eldest son, the *Earl of Arran*, as he was called, was proposed at one time as the

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husband of Queen Mary of Scotland, and at another time as the husband of Queen Elizabeth of England. But the career which opened with such high aspirations came to a sad and untimely end; the earl was afflicted with insanity 1562, and never recovered his reason, though he lived till 1609. His father, the first Duke of Chatelherault, dying 1575, left his second son, *Lord John Hamilton*, the lay-abbot or commendator of Arbroath, virtual head of the house; as such he was, 1599, created Marquis of Hamilton. He died 1604, being succeeded by his son *James, second Marquis of Hamilton*, who, 1619, was created *Earl of Cambridge* in England, and died 1625. He was succeeded by his eldest son, *James, third Marquis of Hamilton*, who led an army of 6,000 men to the support of King Gustavus Adolphus, of Sweden, 1631-2, and a few years later was conspicuous in the great contest between King Charles I. and the Scottish Covenanters. That king, 1643, created him *Duke of Hamilton*, with remainder to the heirs-female of his body in the event of the death of himself and his brother without male issue. In 1648, he led a Scottish army into England for the king's relief, but was encountered and defeated by Cromwell at Preston, in Lancashire. He escaped from the field of battle, but soon afterward was forced to surrender himself prisoner to the parliamentary forces. He was beheaded at Westminster, 1649, Mar., when he was succeeded by his brother *William*, who, 1639, had been created *Earl of Lanark*. He died, 1651, of wounds received at the battle of Worcester. The duchy of Hamilton, in terms of the patent of creation, now devolved on the daughter of the first duke, *Lady Anne*, whose husband, Lord William Douglas, Earl of Selkirk, was, 1660, created Duke of Hamilton for life: he died 1694. The Duchess Anne, who survived till 1716, had, 1698, resigned her titles in the king's hands in favor of her eldest son, *James, Earl of Arran*, who was anew created *Duke of Hamilton* with the precedency of 1643. In 1711, he was created *Duke of Brandon* in England; but the house of lords refused him a seat or vote in parliament, on the ground that the crown was disabled by the Act of Union from granting a peerage of Great Britain to any person who was a peer of Scotland before the union. The duke was killed in a duel in Hyde Park, with Lord Mohun, 1712. He was succeeded by his eldest son, *James*, who, dying 1743, was succeeded by his eldest son, *James*, who, 1752, married the famous beauty Elizabeth Gunning, and died 1758, being succeeded by his eldest son, *James George*, an infant three years old. On the death of the Duke of Douglas, 1761, the male representation of the 'red' or Angus branch of the Douglasses, with the titles of Marquis of Douglas, Earl of Angus, etc., devolved on the Dukes of Hamilton, as descendants of the Duchess Anne's husband, William, Earl of Selkirk, third son of the first Marquis of Douglas. Dying 1769, in his 15th year, *James George, seventh Duke of Hamilton*, was succeeded by his only brother, *Douglas*, who, 1782, took his seat in parliament as *Duke of Brandon*, the house of lords being now satisfied,

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after consultation with the 12 judges, that the Act of Union did not prohibit the crown from making a peer of Scotland a peer of Great Britain. Duke Douglas died without issue 1799, when the titles and estates passed to his uncle, *Archibald*, second son of James, the fifth duke. Duke Archibald, dying 1819, was succeeded by his eldest son, *Alexander*, who died 1852, when he was succeeded by his only son, *William Alexander Anthony Archibald*, *eleventh Duke of Hamilton* in the peerage of Scotland. He died 1863, and was succeeded by *William Alexander Louis Stephen Douglas Hamilton*, the present duke, b. 1845.

LORDS PAISLEY, LORDS ABERCORN, EARLS OF ABERCORN, LORDS STRABANE, VISCOUNTS STRABANE, VISCOUNTS HAMILTON, MARQUISES OF ABERCORN, DUKE OF ABERCORN, etc—*Lord Claud Hamilton*, fourth son of the first Duke of Chatelherault, was appointed commendator of the abbey of Paisley 1553, created *Lord Paisley* 1587, and died 1622. During his life, his eldest son, *James*, was made *Lord Abercorn* 1603, and *Earl of Abercorn* 1606. He had large tracts of land in Ulster, and dying, 1618, was succeeded by his eldest son *James*, who in 1616 had been created *Lord Strabane* in the Irish peerage. The *sixth Earl of Abercorn* was, 1701, created *Viscount Strabane* in the peerage of Ireland. The *eighth Earl of Abercorn*, then one of the 16 Scottish representative peers, was, 1786, created *Viscount Hamilton* in the peerage of Great Britain; when the house of lords found, by a vote of 52 to 38, that a peer of Scotland who had been created a peer of Great Britain, could not sit in parliament as a representative of the peerage of Scotland. His nephew, *ninth Earl of Abercorn*, was, 1790, created *Marquis of Abercorn*. It was ruled in his case, by the house of lords, 1793, that a peer of Scotland who had been created a peer of Great Britain was entitled to vote in the election of the Scottish representative peers. On the death of the second Duke of Hamilton, 1651, the second Earl of Abercorn had claimed the male representation of the house of Hamilton; and, 1861, the *second Marquis and tenth Earl of Abercorn* (created *Duke of Abercorn* 1868), was served heir-male of the first Duke of Chatelherault, in the sheriff court of chancery at Edinburgh, under protest by the Duke of Hamilton, Brandon, and Chatelherault. The Duke of Abercorn is one of three peers who hold peerages in Scotland, in Ireland, and in Great Britain; the others being the Marquis of Hastings (Earl of Loudoun in Scotland, Lord Grey de Ruthyn, etc., in England, Earl of Moira in Ireland, Lord Rawdon in Great Britain) and the Earl of Verulam (Lord Forrester of Corstorphine in Scotland, Viscount Grimstone in Ireland, Lord Verulam in Great Britain). The house of Abercorn gave birth, 1646, to Anthony Hamilton (q.v.), author of the charming *Mémoires du Comte de Gramont*. He was grandson of the first Earl of Abercorn.

EARLS OF SELKIRK.—*Lord Charles Hamilton*, third son of Anne, Duchess of Hamilton, was, 1688, on his father's resignation of the title, created *Earl of Selkirk*, with the precedence of 1646. Dying childless, 1739, he was suc-

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ceeded by his brother, *Lord John Hamilton, Earl of Ruglen*, who died, without male issue, 1744, when the title of Earl of Selkirk passed to his grand-nephew, *Dunbar Hamilton of Baldoon* (grandson of Lord Basil Hamilton, sixth son of Anne, Duchess of Hamilton). The title became extinct, 1885, on the death of his grandson, *Dunbar James Douglas, the sixth earl*.

EARLS OF ORKNEY.—*Lord George Hamilton*, fifth son of Anne, Duchess of Hamilton, was, 1696, created *Earl of Orkney*, with remainder to the heirs whatsoever of his body. Dying, 1737, he was succeeded by his eldest daughter, whose great-great-grandson, *George-William-Hamilton Fitzmaurice*, is now *sixth Earl of Orkney*.

EARLS OF RUGLEN.—*Lord John Hamilton*, fourth son of Anne, Duchess of Hamilton, was, 1697, created *Earl of Ruglen*, with remainder to the heirs whatsoever of his body. He succeeded to the title of *Earl of Selkirk* on the death of his brother 1739, and died 1744, when the title Earl of Selkirk went to his grand-nephew, and the title Earl of Ruglen went to his eldest daughter, *Anne*, widow of William, second Earl of March. On her death, 1748, the earldom of Ruglen devolved on her son, *William, Earl of March*, afterward *fourth Duke of Queensberry*; and on his death, 1810, the title Earl of Ruglen became extinct.

EARLS OF HADDINGTON.—*Sir Walter Fitz-Gilbert*, first ascertained ancestor of the house of Hamilton, had a brother, *Sir John Hamilton of Rossaven*, progenitor of the family of Fingalton and Preston, which, 1788, gave birth to *Sir William Hamilton*, famous scholar and philosopher; and of the family of Innerwick, which, 1563, gave birth to *Sir Thomas Hamilton*, nicknamed ‘*Tam of the Cowgate*,’ one of the ablest and most learned of Scottish lawyers. He was created *Lord Binning and Byres* 1613, and *Earl of Melrose* (a title afterward changed into *Haddington*) 1619. His descendant, *George Arden Baillie Hamilton*, is now *eleventh Earl of Haddington*.

LORDS BARGENY.—*Sir John Hamilton of Bargeny and Carriden*, illegitimate grandson of the first Marquis of Hamilton, was, 1639, created *Lord Bargeny*. The title became dormant or extinct on the death of the fourth lord, 1736.

LORDS BELHAVEN AND STENTOUN.—*Sir James Hamilton of Biel* married a natural daughter of the second Marquis of Hamilton, and was, 1647, created *Lord Belhaven and Stentoun*, with remainder to his heirs-male whatever. He resigned the title 1675, when he had a new patent creating him *Lord Belhaven and Stentoun*, with remainder after his death to the husband of one of his granddaughters, *John Hamilton* (son of Robert Hamilton of Barncluith, judge of the court of session). This gentleman, who succeeded to the title and estates 1679, distinguished himself by wild but eloquent speeches against the Union. He died 1708, and was succeeded by his son *John*, who, being drowned 1721, was succeeded by his son *John*, who died 1764, and was succeeded by his brother *James*, who died 1777. On his death, the great estates of the family passed to *Mrs. Mary*

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Hamilton-Nisbet, wife of Mr. Nisbet of Dirleton, and are now possessed by her great-granddaughter, *Miss Mary Nisbet-Hamilton*. The titles were, 1799, adjudged by the house of lords to *William Hamilton of Wishaw* (as descended from the House of Barncluith). His son, *Robert Montgomery Hamilton*, seventh Lord Belhaven and Stentoun, was, 1831, created *Lord Hamilton of Wishaw* in the peerage of the United Kingdom. The title became dormant, 1868, but was adjudged, 1875, to *James Hamilton*, who thus became the ninth lord.

VISCOUNTS BOYNE.—*Gustavus Hamilton*, grandson of Lord Claud Hamilton, first Lord Paisley, was, 1715, created *Lord Hamilton of Stackallan*, and, 1717, *Viscount Boyne*, in the peerage of Ireland. His descendant, *Gustavus Frederick Russell Hamilton Russell*, was created 1866 *Baron Brancepeth* in the peerage of the United Kingdom.

VISCOUNTS OF CLANBOY, EARLS OF CLANBRASSIL, etc.—*James Hamilton*, son of Hans Hamilton (natural son of *Archibald Hamilton of Raploch*), vicar of Dunlop, in Ayrshire, settled in Ireland about 1587, and, 1622, was created *Viscount of Clanboy*. His son *James* was created *Earl of Clanbrassil*, and dying 1659, was succeeded by his son *Henry*, on whose death 1675, the title became extinct. It was revived, nearly a century afterward, in favor of his kinsman, *James Hamilton of Tullimore* (grandson of Hans Hamilton, vicar of Dunlop), who 1719 had been created *Viscount Limerick* and *Lord Clanboy*, and 1756 was made *Earl of Clanbrassil* in the peerage of Ireland. On the death of his son *James* 1799, the titles became extinct. His estates went to his sister *Anne*, Countess of Roden, whose grandson, *Robert*, *Earl of Roden*, was, 1821, created *Lord Clanbrassil* in the peerage of the United Kingdom.

A *Brief Account of the Family of Hamilton*, written by Dr. James Baillie of Carnbroe, during the first half of the 17th c., is preserved among the mss. in the Advocates' Library at Edinburgh. A *History of the House of Hamilton*, written about 60 years afterward by Hamilton of Wishaw, is not now known to be extant. *Memoirs of the Lives and Actions of James and William, Dukes of Hamilton and Chatelherault*, by Gilbert Burnet, afterward Bp. of Salisbury, were published 1677. John Anderson, surgeon at Hamilton, published *Historical and Genealogical Memoirs of the House of Hamilton* (1825, 1 vol. 4to).

HAMILTON, Sir WILLIAM: grandson of William, third Duke of Hamilton: 1730–1803, Apr. 6; b. Scotland; of a noble stock, but impoverished family. He was, 1764, appointed English ambassador to the court of Naples, and there he was active in the excavation of the ruins of Herculaneum and Pompeii, collecting a rare assortment of art-relics, chiefly Greek and Etruscan antiquities, afterward purchased for the British Museum. He was recalled to England 1800; but on his way home his vessel was wrecked, and a great part of his collection of antiques lost. Drawings of these had, however, been preserved, which were published in his *Antiquités Etrusques, Grecques, et Romaines tirées du Cabinet de M*

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Hamilton (4 vols. Naples 1766). He published also *Observations on Mount Vesuvius, Mount Etna*, etc. (Lond. 1772); *Campi Phlegraei* (Naples 1776-7), etc.; besides papers in *Philosophical Transactions* (Lond. 1767-95). H.'s claim on the British govt. for special services was disallowed, and he died at London in comparative poverty.—The wife of H. was the notorious Lady Hamilton (EMMA LYON H.), whose name figures unpleasantly in the biography of Lord Nelson.

HAMILTON, Sir WILLIAM, of Preston, Bart.: the most learned and scientific philosopher of the Scottish school: 1788, Mar. 8—1856, May 6; b. Glasgow, where his father, Dr. William H., and his grandfather, Dr. Thomas H., held in succession the chairs of anatomy and botany. Though the Hamiltons of Preston (Haddingtonshire), who were raised to a baronetcy 1673, had not assumed their title since the death of Sir William H., 1688, Nov., when his brother and heir, Sir Robert H., the Covenanter, refused to take the oath of allegiance, the philosopher made good his claim to represent them, and therefore, to be descended from the leader of the Covenanters at Drumclog and Bothwell Bridge. After gaining high distinction, especially in the philosophical classes at Glasgow, he went 1809 to Balliol College, Oxford, as a Snell exhibitioner, and there took a position which never had and never has been surpassed, laying the basis of his vast erudition in mediæval and modern, as well as in ancient literature (see *Discussions*, 2d ed. 750 note). He left Oxford 1812, and entered the Scotch bar 1813, but seems not to have practiced in his profession. On the death of Dr. Brown, 1820, he was an unsuccessful competitor for the chair of moral philosophy in Edinburgh. In the following year, however, H. was appointed to the professorship of history.

H. had now reached his 30th year, without giving to the world any indication of those speculations which he had been silently and slowly maturing. But there appeared in the *Edinburgh Review*, 1829, a critique of Cousin's *Cours de Philosophie* of the previous year, in which was developed that philosopher's doctrine of the Infinite. The critique immediately excited admiration, especially on the continent, Cousin himself acknowledging that his reviewer understood thoroughly the theory which he opposed, and combated it with a speculative power, with a knowledge of philosophical systems, and a command of philosophical expression, which he had not expected in Britain. For some years after this, H. was a regular contributor to the *Edinburgh Review*. Besides other philosophical articles—two of which, on the Philosophy of Perception, and on Recent Publications in Logical Science, are especially notable—he contributed several on education and university reform. Many of these, besides being republished in Mr. Crosse's *Selections from the Edinburgh Review*, were translated into German, French, and Italian, the French collection, *Fragments de Philosophie*, being especially valuable for the introduction, appendix, and notes of its

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editor, Peisse. In 1852, they all were edited by H. himself, with large notes and appendices, under the title of *Discussions in Philosophy and Literature, Education, and University Reform*. In 1836, after a severe contest, H. was elected to the chair of logic and metaphysics in Edinburgh. During his first session, he delivered a course of lectures on metaphysics, which was followed in the succeeding session by a course on logic; and these two courses he continued to read on each alternate year till the close of his life. His influence soon began to show itself in the university, to which he attracted many young men. Extensive notes of his lectures were taken by his students, and numerous copies of them, transcribed from short-hand reports, were in circulation during the later years of his life. Since his death, they have been published under the editorship of Professors Mansel and Veitch (*Sir William Hamilton's Lectures*, 4 vols. 1859-61). These lectures, written mostly during the sessions in which they were first delivered, lack the exactness of thought and expression which render the works revised by himself for publication models of philosophical composition; yet this may give them a higher value as introductory works. Still it is to be regretted that the materials embodied in these volumes were never, as was intended, wrought into another work which H. had already planned at the time of his appointment. This was his edition of the works of Reid, with notes and supplementary dissertations. It is perhaps impossible to adduce any writings which have received the same amount of editorial care. The general aim of H.'s whole philosophy is, in fact, but the special aim of this edition of Reid. His conviction was, that the philosophy of common sense (see COMMON SENSE, THE PHILOSOPHY OF) represents the highest reaches of human speculation, and he sought, accordingly, in his annotations of Reid's writings, as in his independent works, to point out the relation of the Scottish philosophy to the systems of other countries, as well as to translate it into a more scientific expression, that he might bring into clearer view its true character and real basis. In this, therefore, more than in any of his other works, he betrays his fondness for eliciting his own theories from the hints of previous thinkers; his peculiar doctrines of perception, of the conditioned, of mental reproduction, etc., are traced to the writings of Aristotle. Valuable, however, as this work is, its latest edition contains references to numerous dissertations beyond that, in the middle of which it abruptly stops. This is undoubtedly to be attributed to the decay of H.'s health. By the paralysis of his whole right side, though his mind continued unimpaired, his power of work was seriously curtailed during his later years. He was, however, generally able, with an assistant, to perform the duties of his class till the close of session 1855-6, when he suddenly began to fail, and death came on. A *Memoir of Sir W. H.* was published by Prof. Veitch 1869. A short sketch of his life and estimate of his place in the history of philosophy, by W. S. Monck, appeared 1881.

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H.'s system professes to be merely an explication of the Scottish philosophy; it may, however, be questioned whether all his exegetical skill has vindicated the position claimed for Reid, whether, therefore, it would not have been better for H. had he made a separate path, through which he might have reached a philosophic system less hampered, and more fitted to be universal. For while his philosophy is distinguished in general from previous Scottish speculations by its more rigorously systematic character, it ventures, as in his doctrine of the conditioned, into realms of thought, whose existence had been scarcely surmised by any of his countrymen. This doctrine, which limits positive thought to the conditioned sphere between the contradictory poles of the infinite and the absolute, has attracted more attention than any of his other doctrines, especially since the publication of Mr. Manse's *Bampton Lectures* 1858; and though H.'s discussion is confined to the metaphysical aspects of the question, and is perhaps incompatible with a consideration of the ethical ideas which must be embraced in our conception of the Infinite Being, it continued for a time to gather round it the higher efforts of British speculation. See **CONDITIONED, THE PHILOSOPHY OF THE**. H. is distinguished also by important contributions to logic. These may be reduced to the two principles (1) of distinguishing reasoning in the quantity of extension from reasoning in that of comprehension, and (2) of stating explicitly what is thought implicitly; from the former of which issues his twofold determination of major, minor, and middle terms, as of major and minor premises; from the latter the quantification of the predicate, the reduction of the modes of conversion to one, and his numerous simplifications in the laws of syllogism.—H. reveals in his writings his singular intensity and moral force. He had great polemical ardor, yet an equal sincerity and candor.

HAMILTON, Sir WILLIAM ROWAN, LL.D.: one of the few really great mathematicians of the present century: 1805, Aug. 4—1865, Sep. 2; b. Dublin. His father had migrated in youth from Scotland. From infancy he showed extraordinary talents, and at the age of 13 had a good knowledge of 13 languages. In his 15th year he had mastered thoroughly all the ordinary university course in mathematics, and commenced original investigations of so promising a kind, that Dr. Brinkley took him under his especial patronage. His earlier essays, connected with contact of curves, and caustics, grew by degrees into an elaborate treatise on the *Theory of Systems of Rays*, published by the Royal Irish Acad. 1828. To this he added various supplements, in the last of which, 1833, he predicted the existence of the two kinds of conical refraction (see **REFRACTION**), the experimental verification of which by Lloyd still forms one of the most convincing proofs of the truth of the Undulatory Theory of Light: see **LIGHT**. The great feature of his *Systems of Rays* is the employment of a single function, upon whose differential coefficients (taken on various hypotheses) the whole of any optical problem is made to depend. He seems to have been led by this to his next great

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work, *A General Method in Dynamics*, published in *Philosophical Transactions* 1834. Here, again, the whole of any dynamical problem is made to depend on a single function and its differential coefficients. This paper produced a profound sensation, especially among continental mathematicians. Jacobi of Königsberg took up the purely mathematical part of H.'s method, and considerably extended it. and of late years the dynamical part has been richly commented on and elaborated by several French mathematicians, all uniting in admiration of the genius shown in the original papers. For these researches, H. was elected an honorary member of the Acad. of St. Petersburg, a rare and coveted distinction. The principle of *varying action* forms the main feature of the memoirs. Among H.'s numerous works, are a very general *Theorem in the Separation of Symbols in Finite Differences*, and *Examination of Abel's Argument concerning the Impossibility of solving the General Equation of the Fifth Degree*. Notable also is his memoir on *Algebra as the Science of Pure Time*, one of the first steps to his grand invention of quaternions. For the steps by which he was led to this latter investigation, which will certainly, when better known, give him even a greater reputation than conical refraction or varying action has done, see QUATERNIONS. On the latter subject he published, 1853, a large vol. of *Lectures*, which, as the unaided work of a single man in a few years, has perhaps hardly been surpassed. Another more elementary vol. on the same subject, adding his more recent improvements and extensions of his calculus, was published after his death.

While yet an undergraduate of Trinity College, Dublin, he was appointed, 1827, successor to Dr. Brinkley in the Andrews' chair of astronomy in the Univ. of Dublin, to which is attached the astronomer-royalship of Ireland. In 1835 he was knighted on his delivering the address as sec. to the British Assoc. for its Dublin meeting. He was for many years pres. of the Royal Irish Acad. and was a member of most of the great scientific academies of Europe. See his *Life* by Graves (1883).

HAMILTON COLLEGE: at Clinton, Oneida co., N. Y.; under the auspices of the Presb. Church; chartered and opened as a college 1812. It is the outgrowth of the Hamilton Oneida Acad., established through the efforts of the Rev. Samuel Kirkland (q.v.) 1793. The collegiate course occupies four years. The buildings comprise a chapel, three halls, library and memorial hall, the noted Litchfield observatory, gymnasium, boarding hall, Knox hall of natural history, and a chemical laboratory. The cabinets contain the herbarium collected by the late Dr. H. P. Sartwell, comprising 8,000 samples of plants, cured, labelled, and classified in 62 vols.; the collections in entomology, ornithology, and comparative anatomy, and three generations of 17-year locusts, presented by Judge Thomas Barlow; and more than 20,000 specimens in geology, mineralogy, and natural history. The observatory, long noted for the superior excellence of its service, was endowed, together

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with a chair of astronomy, with \$30,000, by Edwin C. Litchfield 1867; and Dr. Christian H. F. Peters (q.v.), who had been instructor in astronomy since 1858, was made prof. and director of the observatory, and held both offices till his death 1890, July 19. The observatory is equipped with an equatorial telescope having a focal length of nearly 16 ft. and an object-glass of 13.5 inches; a Steinheil portable telescope; a Bond chronograph; an astronomical clock; and a transit-instrument. The law school, founded 1854, contains the valuable law library of 5,000 vols. bequeathed it by William Curtis Noves. The college grounds aggregate about 40 acres, and the campus 17.—In the college year 1901-2 there were 20 professors and instructors; 196 students of all grades; 10 endowed professorships; 45 scholarships; 43,000 vols. in the libraries; grounds and buildings valued at \$500,000; permanent productive funds \$500,000; and income from all sources, excepting board and lodging \$90,200. In 1890 Hon. Alexander C. Soper, of Chicago, class of '67, agreed to defray the expense of turning Middle College into a first-class gymnasium, the building being an old dormitory long vacant, and the old gymnasium being deficient in size and equipment. He also gave \$5,000 as the foundation for the Edward Huntington mathematical prize scholarship. By the death of Schuyler B. Steers, class of '55, the college also received \$10,000 for scholarships for needy students. The same year a committee of the synod of N. Y. was endeavoring to enlarge the general endowment. In addition to the college buildings proper, all the fraternities at Hamilton have their own halls. In 1892 Melancthon Woolsey Stryker, D.D., LL.D., was elected president. The other presidents of H. C. have been: Azel Backus, D.D., 1812-16; Henry Davis, D.D., 1817-33; Sereno Edwards Dwight, D.D., 1833-35; Joseph Penny, D.D., 1835-39; Simeon North, D.D., LL.D., 1839-57; Samuel Ware Fisher, D.D., LL.D., 1858-66; Samuel Gilman Brown, D.D., LL.D., 1866-81; and Henry Darling, D.D., LL.D., 1881-91.

HAMILTONIAN SYSTEM, *hām-ēl-tō'nī-an sīs'tēm*: method of teaching languages, so called from the inventor, James Hamilton (1769-1831), English merchant. Having removed to Hamburg 1798, he took lessons in German, on the understanding that he was not to be troubled with the grammar of the language. He and his teacher read together a German book of anecdotes, the pupil translating word for word after his teacher; and after 12 lessons Hamilton found himself—so at least we are told—able to read an easy German book. His attention was thus drawn to the subject of learning foreign languages, and finding himself, after a life of vicissitudes, in New York, about 1815, he wrote a treatise expounding his views, and began putting them in practice. He undertook to teach adults in 15 lessons to translate the Gospel of St. John from French into English, but found, we are told, 10 lessons sufficient. After teaching with great success in America, he returned 1823 to England, and visited the chief cities, everywhere attract-

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ing crowds of pupils, notwithstanding that his system was denounced by many as quackery. He died in Dublin.

The Hamiltonian method was only one stage in the reaction—begun as early as the time of Comenius (q.v.), and carried on by Milton and Locke with others—against the pedantic method of beginning to teach a foreign or dead language by making the learner commit to memory a complete set of grammar rules before he had acquired sufficient practical acquaintance with the language itself in its concrete form, to give the rules any meaning. Hamilton's method of procedure may be summed up as follows: Supposing Latin the language to be learned, Hamilton put into the pupil's hands the Gospel of St. John in Latin, with an interlinear version, so literal as to show the gender as well as the number of nouns, etc., and the mood, person, and tense of the verbs. The idioms were translated not by corresponding idioms, but each word by its literal equivalent in English. A fundamental point with Hamilton was to give the primitive, and not the derivative signification of the word, and to give the same signification to the same word in whatever connection it might stand. When the pupil had by this practice got considerable knowledge of the vocables and accidence of the language, he was practiced in turning the English version back into the Latin. Hamilton undertook in this way to give boys of eleven years as much knowledge of Latin in six months as they usually learn at public schools in six years. One obvious defect of this method is, that no language admits of a word-for-word and uniform translation into another; the method is in this respect misleading. Besides, one great use of learning languages is as a mental discipline, and in this point of view the Hamiltonian system is useless. It is useful in the case of adults who wish to acquire, with as little labor as possible, a limited power of reading and speaking a language; and in any case, a study begun on Hamilton's principles, may be afterward prosecuted on a better method, thus avoiding the painful initiatory stages of the grammatical method. Hamilton's system was the herald of a beneficent reform in linguistic study, though in its crude form it is superseded in the practice of most modern teachers, who combine the practical with the grammatical study of a language.

HAMIRPUR, or HUMERPOOR, *hŭm-ēr-pór'*: district in the N.W. Provinces, British India; lat. $25^{\circ} 5'$ — $26^{\circ} 10'$ n. long. $79^{\circ} 22' 45''$ — $80^{\circ} 25' 15''$ e.; bounded n. by the Jumna, n.w. by the state of Baoni and Betwa river, w. by the Dhasan river, s. by the states of Alipura, Chhatarpur, and Charkhari, e. by the Banda district; and comprising the states of Sarila, Jiqui, and Bihat, and portions of Charkhari and Garrauli. It contains a series of remarkable artificial lakes built about 800 years ago for irrigation, extensive ruins of beautifully carved and decorated granite temples. The soil is fertile, and there are several rivers of which the non-navigable ones of Betwa and Dhasan are chief. Out of an area of 1,464,641 acres, 762,212 are under cultivation. Cotton and grain are the principal products, and cotton

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cloth and soapstone ornaments the chief manufactures. H. contains 6 towns of more than 5,000 inhabitants, had a police (1871) of 534 men with 1,953 village watchmen, and (1870) 112 schools with 3,066 pupils. It was the centre of the Chandel kingdom 9th—14th c., became a Mussulman possession at the close of the 13th c. and remained so 500 years, and was the scene of a fierce rebellion at the outbreak of the Indian mutiny. Capital, Hamirpur. Pop. dist. (1891) 513,720; cap. 14,479.

HAMITE, n. *hā'mīt* [L. *hāmūs*, a hook]: in *geol.*, a genus of the ammonite family, so named from the shell, which is hooked or bent upon itself.

HAMITES, n. plu. *hām'īts*: the descendants of *Ham*, the son of Noah. **HAMITIC**, a. *hā-mīt'ik*, pertaining to *Ham*, or to his descendants.

HAMLET, n. *hām'lēt* [AS. *ham*, a village, a town; Goth. *haims*; F. *hameau*; OF. *kamel*, a hamlet, a village; Swiss, *hain*, the inclosed ground in which a house is situated]: a little cluster of houses in the country; a small village.

HAM'LET, Prince of Denmark: see **AMLETH**.

HAMLIN, *hām'lin*, **CYRUS**, D.D., LL.D.: educator: b. Waterford, Me., 1811, Jan. 5. He graduated at Bowdoin College 1834, and the Bangor Theol. Seminary (Congl.) 1837, was a missionary of the A. B. C. F. M. in Turkey 1837-60, was chosen pres. of Robert College in Constantinople 1860, and resigned 1876; returned to the United States, and became prof. of dogmatic theol. in Bangor Theol. Seminary 1877, pres. of Middlebury College 1880, and retired from active labor 1885. He published (in Armenian) in Constantinople Upham's *Mental Philosophy; Papists and Protestants* (1847); *Arithmetics for Armenians* (1848), in Turkish translation (1870); and a critical review of Abp. Matteos's writings (1863); and in English *Cholera and its Treatment* (Boston 1865), and *Among the Turks* (New York 1877). He received the degree D.D. from Harvard College 1861, and LL.D. from the Univ. of the City of New York 1870.

HAM'LIN, **HANNIBAL**, LL.D.: 1809, Aug. 17—1891, July 4; b. Paris, Me.: statesman. He was brought up on his father's farm; learned the printer's trade; studied law; was admitted to the bar 1833, was a member of the state legislature 1836-40 and 1847, and speaker 1837-39 and 1840; was unsuccessful democratic candidate for congress 1840, and successful 1842 and 44; became U. S. senator to fill vacancy 1848, and for full term 1851; resigned on being elected gov. of Me. as a republican 1857; resigned as gov. the same year on being re-elected U. S. senator; and resigned from the senate 1861, Jan., having been elected vice-pres. on the ticket with Abraham Lincoln. By virtue of this office he presided over the senate 1861, Mar.—1865, Mar., and soon after retiring was appointed collector of the port of Boston. He was re-elected U. S. senator 1869 and 75, and was U. S. minister to Spain 1881-83. He served as regent of the Smithsonian Institu-

HAMM—HAMMER.

tion 1861-65 and 1870-82, and was many years dean of the board. He received the degree LL.D. from Colby University.

HAMM, *hám*: town of Prussia, province of Westphalia, on the left bank of the Lippe, 22 m. n.n.w. of Arnsberg. It is surrounded by an old wall now converted into a promenade, and by a ditch; contains a castle, gymnasium, and college, and manufactures linen extensively. Iron also is produced. H. was formerly one of the Hanse towns. Pop. (1880) 20,783; (1885) 22,523.

HAMME, *hám'méh*: town of Belgium, province of E. Flanders, on the Durme river near its entrance into the Scheldt, 18 m. e.n.e. of Ghent. Its industries comprise grain and oil mills, manufactures of lace, linen, and rope, ship-building, and a valuable trade in flax and hemp. Antiquarian remains abound in its vicinity. Pop. (1867) 10,142; (1876) 10,778.

HAMMEL, n. *hǎm'ěl*, or HEMMEL, n. *hěm'ěl* [Ger. *hammel*, a castrated sheep: Bav. *hämmel*, a wether—from *hamal*, to mutilate: Icel. *hamla*, to hinder from doing: Scot. *hamelan*, domestic—from *hame*, home: AS. *ham*, home; the idea being the place where animals disabled or mutilated are kept, a home]: in *Scot.*, an open shed or court for cattle; *prov. Eng.*, a shed or hovel for cattle; a covered shed with racks for straw or hay, with a doorway into a small open court, which court is fitted up with a manger for turnips and a trough for water, as for horses or cattle.

HAMMER, n. *hǎm'mér* [Ger. and Dut. *hammer*; Icel. *hamar*, a hammer: a word imitative of the sound of blows]: a striking instrument; instrument for driving nails, etc., usually consisting of an iron head faced with steel, fixed crosswise on a wooden handle; when one side of the head is thinned out to a wedge-form (sometimes bent, and with a V-shaped notch for drawing nails) or to a point, this is called the *pane* of the hammer: the *face* is the flat disk which strikes. Hammers have many modifications in form for various kinds of work: see FORGING. FILE-CUTTING: GOLD-BEATING: ETC.: V. to beat or forge with a hammer. HAM'MERING, imp. N. the act of striking with a hammer. HAM'MERED, pp. *-mèrd*. HAMMER-BEAM, tie-beam, a portion of an open timber roof, forming a truss at the foot of the rafter, which gives strength and elegance to the construction. The appearance is as if there had been a tie clear across, and the centre part being cut out, the remnants at each end form the hammer-beam. The end projecting into the apartment is usually ornamented with shields, heads, pendants, etc. HAMMER-CLOTH, cloth which covers a coach-box or driver's seat: now seldom used; so called because originally the box contained a hammer, nails, etc., for repairs on the coach during a journey—though it is by some deemed a corruption of hammock-cloth, the seat which the cloth covers being formed of straps or webbing stretched between two-crutches, as a sailor's hammock is suspended: also, the

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hammer is said by some to be a corruption of Dut. *hemel*, heaven, a tester or covering, from a misapprehension of its real meaning: Icel. *hamr*, a covering—see Skeat: it is suggested also that the word may be a mere corruption of *hamper* or *hanaper-cloth*, as hampers were often carried with a cover. HAMMERMAN, in *Scot.*, name for a smith. To HAMMER AWAY, to be busy. To HAMMER OUT, to work or contrive in the mind, to work by keeping in motion or agitation. To BRING TO THE HAMMER, to sell by putting up for auction.

HAMMER, STEAM, or POWER: tool, or machine for applying the force of impact by a blow from a mass heavier than a man can wield. A great variety of power-hammers are used. These, for the most part, are masses of iron raised by steam or other power, and then allowed to fall by their own gravity upon the work. The *helve* or *shingling hammer*, used for compressing the mass of iron drawn from the puddling furnace, and the *tilt-hammer*, used in the manufacture of shear-steel, are important examples of such hammers. The first is a heavy bar of cast iron about ten ft. long, weighing three or four tons or more, to which is attached a head of wrought iron faced with steel, weighing nearly half a ton additional: it works upon an axis at the end of the bar furthest from the head, and is raised by cams attached to a heavy wheel set in motion by steam or water power; these cams strike or 'lick' a projection extending beyond the head, and thus raise it about 18 or 20 inches at the rate of 70 to 100 times per minute. The tilt-hammer is similar, but much lighter, and is adapted for striking more than 300 blows per minute: in order to obtain this velocity, a short 'tail' extends with a downward inclination beyond the axis, and the cams strike this downward, and thus lift the longer arm of the lever to which the head is attached. These, when worked by steam, as they usually are, are, of course, steam-hammers; but when the term steam-hammer is used without qualification, it applies to a more elaborate machine of very different construction, invented by James Nasmyth 1842, and subsequently improved in minor details. In this, the hammer is attached to the bottom of a heavy mass of iron, the 'hammer-block,' capable of rising and falling between upright bars or 'guides;' this, again, is fixed to the rod of a piston, which works in a cylinder placed perpendicularly over the hammer-block, hammer, and anvil. As the piston rises in the cylinder, it lifts the attached mass, which is then allowed to fall from varying heights, according to an adjustment which can be made by an attendant simply touching a handle. The adjustments are so perfect that it may be made to crush a mass of iron, and at the next blow to crack a nut held in the fingers without damaging either kernel or fingers, or to crack the top of an egg in an egg-cup, as might be done with the bowl of a spoon. One novel contrivance, in this elaborate mechanism, viz., the 'latch,' which reverses the action of the steam-valves at the precise moment required, is of remarkable ingenuity.

In the first 'Nasmyths' used, the weight of the descend-

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ing mass—viz., the hammer-block, hammer, etc.—was 30 to 60 cwts., and they were justly regarded as mechanical marvels. Steam-hammers with a descending mass of 20 to 50 tons have since been constructed. In comparing the power of these with the 'helve' or other hammers, which descend by angular motion on a pivot, it must be remembered that these latter, when formed of a straight bar, are effective only to the extent of a body of one-third of their weight falling directly from a corresponding height, on account of the fact that the whole bar forming the hammer is moving with a velocity varying from nothing at the axis, to a maximum at the end of the bar, where the hammer-face is fixed.

HAMMERFEST, *hâm'mër-fëst*: principal town and trading port of Finmark (q.v.), in Norway, and the most northern town of Europe; 70° 40' n. lat., and 23° 30' e. long. H. is in a barren treeless district, in the rocky island of Kvaløe ('Whale Island'), and consists of one long street skirting a wall of rock. The harbor is good, and presents a busy appearance during summer, when it is visited by some 200 vessels, which bring hemp, meal, potatoes, and other provisions, in exchange for oil and fish (staple commodities of the island), reindeer hides, eiderdown, and foxskins. During the two summer months the sun is continually above the horizon, and the heat is very great, yet the winter, strange to say, is mild enough to allow of the fisheries being carried on. Copper from the works at Kaafjord, which have been in the hands of an English company since 1847, is sent to England from Hammerfest. H. is the northern limit of the birch. Pop. abt. 2,000.

HAMMER-HEAD, or HAMMER-HEADED SHARK (*Zygæna* or *Sphyrna*): genus of fishes of the great family of Sharks; having the general form and characters of the family; but distinguished from all other fishes by the extraordinary form of the head, which, in the adults, resembles a double-headed hammer, being extended on both sides to a considerable length, and having the eyes at the ends of the lateral extensions. The mouth is below the centre of the head.



Hammer-headed Shark (*Zygæna malleus*).

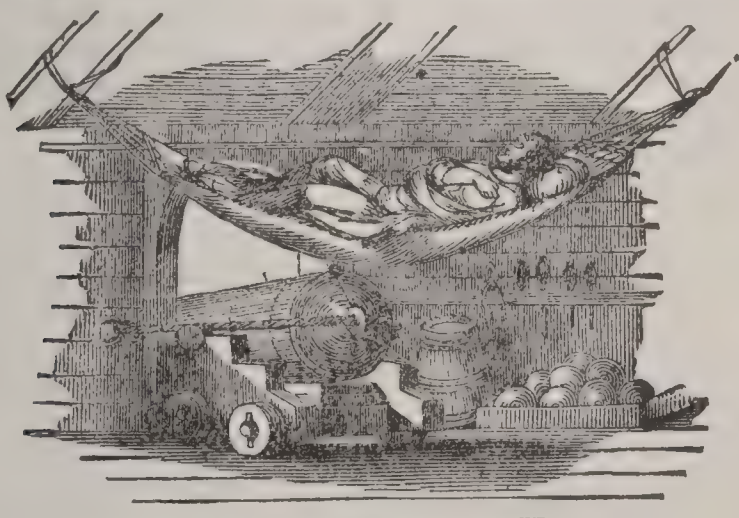
The hammer-headed form is not nearly so perfect in the young as in the adults. It is supposed to be intended for enlargement of the sphere of vision. In the fetal state, the lateral extensions are doubled upon themselves. The hammer-heads are ovo-viviparous, and produce many (about 40) young at a birth. They are most abundant in tropical seas, particularly in the Atlantic. In the Bight

HAMMERSMITH—HAMMOCK.

of Benin, 'they may often be seen ascending from the clear blue depths of the ocean like a great cloud.' They are very voracious. Some attain great size. One species (*Z. malleus*), on the British coasts, attains a length of 12 ft. or more.

HAMMERSMITH, *hăm'mēr-smĭth*: village of England, county of Middlesex, about six m. w.s.w. of the London post office; on the Thames, here crossed by an elegant suspension bridge, completed 1827. The grounds in the vicinity are occupied as nurseries and market-gardens, from which large supply of flowers and vegetables is sent to the city. The parish church, a plain brick-building with low tower, was erected 1631, and consecrated by Laud, then Bp. of London. H. contains also the convent of the Good Shepherd, and, in connection with it, an asylum for reformed women. Near the Broadway stands the West-London Hospital, supported by voluntary contributions. There is also a large endowed school, founded by William Godolphin, and named from him. Formerly, a detached village, and connected with London in only a commercial sense, H. is now joined to that city by continuous lines of street, and forms essentially a portion of it. The parish of H. is traversed by six very important railways, two of which terminate here. Pop. of parish, about 50,000.

HAMMOCK, n. *hăm'mōk* [Peruvian and Sp. *hamaca*]: apparatus in which a sailor slings his bed: thence any swinging or suspended couch, often for out-door use in summer. A sailor's H. consists of a rectangular piece of hempen cloth, about six ft. long and three in width, gathered together at each end by means of cords and a clew, and hung to hooks under the deck. The H. thus forms a sort of bag capable of containing the sailor's mattress, his



Hammock.

blankets, and himself, as soon as he has acquired the not easy knack of climbing into it. The hammocks are taken below at sunset, and hung in rows, about two ft. apart, in the men's portion of the ship. When done with in the morning, the bedding is carefully tied up within each, and the whole stowed in the hammock-netting, generally in the bulwarks of the waist, unless the weather be wet. Stowed

HAMMOND.

thus in the netting, the hammocks form a strong barrier against small shot.

HAMMOND: city, Lake co., Ind., abt. 20 m. s.e. from Chicago; on the Grand Calumet river, and on the Erie, the Pennsylvania, the Michigan Central, and the Louisville New Albany and Chicago railroads. H. has 25 manufacturing establishments, a slaughterhouse killing over 2,500 cattle daily, nail-mills, steel-works, axle and spring factories, a foundry, starch-works, etc. There are 20 schools, 15 churches, 3 daily and 4 weekly newspapers, an improved system of water-works, and electric street-railways. Pop. (1880) 699; (1890) 5,442; (1893, estimated) 13,000.

HAMMOND, *häm'ond*, HENRY, D.D.: able controversial writer: 1605, Aug. 18—1660, Apr. 25; b. Chertsey, Surrey. He was educated at Eton and Oxford, and 1629 entered into holy orders. In 1643 he became archdeacon of Chichester. H. followed the unfortunate Charles I. to the Isle of Wight, and continued as his chaplain till his attendants were dismissed 1647. In 1648, he was deprived of his college offices by the parliamentary commissioners, and the remainder of his life was spent in literary labor. His celebrated work, the *Paraphrase and Annotations on the New Testament*, was published 1653. A new and enlarged ed. came out 1656, but the best ed. is that of 1702. His collected works were published, 4 vols. folio, 1674–84. His sermons and minor works are reprinted in the Oxford *Library of Anglo-Catholic Theology*.

HAMMOND, *häm'ond*, SAMUEL: 1757, Sep. 11—1842, Sep. 11; b. Richmond co., Va.: soldier. He served in the Indian campaign with Gov. Dunmore, with the cavalry through the revolutionary war chiefly in the south; was surveyor-gen. of Ga. after the war, fought in the Creek war 1793, was member of congress as a democrat 1803–05, milit. and civil commandant of Upper La., and part of the time receiver of public moneys 1805–24, surveyor-gen. of Ga. 1825, and sec. of state 1831–35.

HAMMOND, WILLIAM ALEXANDER, M.D.: physician: b. Annapolis, Md., 1828, Aug. 28. He graduated at the Univ. of the City of New York as M.D. 1848, entered the U. S. army as asst.surg. 1849, and resigned 1860, Oct. to become prof. of anatomy and physiology in the Univ. of Md. In 1861, May, he was reappointed asst.surg. in the army, and 1862, Apr., became surg.gen. in the army with the rank of brig.gen. In this office he showed great energy and large executive ability, reorganized the medical and surgical service, established the army and medical museum, and planned *The Medical and Surgical History of the Rebellion*. In 1864, Aug., he was dismissed from the army after a court martial trial of charges of official irregularities, but 1879, Aug., was restored as surg.gen. and brig.gen. on the retired list by the pres. at the direction of congress. On leaving the army he removed to New York, became specialist on the diseases of the nervous system, was prof. of that branch in the medical college of Bellevue Hospital 1867–73 and in the med.dept. of the Univ. of the City of New York 1873–82, and was a founder of the New York Post-Graduate Med-

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ical School (1882), with which he was for many years connected. He published numerous medical, surgical, and nerve-disease works, and was author of several popular novels. He died 1900, Jan. 5.

HAMON, *â-mông'*, **JEAN LOUIS**: 1821, May 5—1874, May 29; b. Plouha, France: painter. Early in life he entered a monastery with the intention of studying for the Rom. Cath. priesthood; but escaped and went to Paris 1840, and studied painting with Paul Delaroche and G. C. Gleyre. In 1848 he made his first exhibition in the Marseilles Museum with *The Tomb of Christ* and *Over the Gate*. He painted steadily a year, then discouraged because his works attracted little public notice entered the porcelain manufactory at Sèvres, and there speedily achieved renown by his exquisite designs for vases. At the London exposition of 1851 an enamelled casket of his gained a medal, and with this encouragement he returned to painting on canvas. In 1852 he sent to the salon his *Comedy of Humanity*, which attracted attention. His next work, *My Sister is not at Home*, was bought by the govt. and secured a 3d-class medal for him. From this time he painted with great rapidity and produced many pictures teeming with poetic sentiment and classical fancies that have been widely circulated in engraved form. He received a 2d-class medal and became a chevalier of the Legion of Honor for his contributions to the Paris exposition 1855. A few years before his death he established a studio on the shores of the Mediterranean. His other works include *Love and his Cortège*, *The Captive Butterfly*, *Aurora*, *Love on a Visit*, *It is Not I*, *The Maidens at Lesbos*, and *The Muses at Pompeii*.

HAMOON': see **SEISTAN**, **LAKE OF**.

HAMOUS, a. *hā'mūs* [L. *hamus*, a hook]: in *bot.*, having the end hooked or curved.

HAMPDEN, *hämp'den*, **JOHN**: celebrated English patriot: 1594–1643, June 24; said to have been born in London; son of William H. of Hampden, Buckinghamshire, and Elizabeth, daughter of Sir Henry Cromwell of Hinchingsbrooke, Huntingdonshire, aunt of Oliver Cromwell. His father died when H. was only three years old. In 1609, he was entered a gentleman commoner at Magdalen College, Oxford, and 1613 was admitted to the Inner Temple, where he made considerable progress in the study of law. 1621, Jan. 30, he entered the house of commons as member for the now disfranchised borough of Grampound. He attached himself to the party of St. John, Selden, Coke, Pym, and those who opposed the arbitrary encroachments of the crown, but at first took no forward part in public business, and spoke but seldom. In the first three parliaments of Charles I., he sat for Wendover. In 1627, for refusing to pay his proportion of the general loan which the king attempted to raise on his own authority, H. was committed to close imprisonment in the Gatehouse. Subsequently, he was removed to Hampshire, but, with 76 others, unconditionally liberated by an order of council. His activity and industry in parliament now rendered him one of its leading and most useful members; he was on most of its

HAMPDEN-SIDNEY COLLEGE—HAMPER.

committees; but after the dissolution of the parliament of 1628-9, he retired to his estate and devoted himself to study and to country sports and occupations. Charles, claiming the power to tax the country in any way he thought proper, had recourse to the impost of ship-money 1634. At first limited to London and the maritime towns, and levied only in war, it was, 1636, extended to inland places in time of peace, when H. resolutely refused to pay it, and his example was followed by nearly the whole county of Buckingham. In 1637, he was prosecuted before the court of exchequer for non-payment, when a majority of the judges gave verdict against him. In the short parliament of 1640, H. was prominent in the great contest between the crown and the house of commons. To the long parliament he was returned both for Wendover and the county of Buckingham, and chose the latter. For his resistance to the king's proceedings, he was one of the five members whom Charles, 1642, Jan. 4, rashly attempted in person to seize in the house of commons; and on the breaking out of the civil war, he raised and became col. of a regiment in the parliamentary army under the Earl of Essex. He was also a member of the committee of public safety, and in the prosecution of the war, constantly advised prompt and energetic measures, against the hesitating policy of Essex. He was present at the repulse of the royalists at Southam, at their defeat near Aylesbury, at the fight at Edgehill, and at the assault and capture of Reading. Prince Rupert having attacked a parliamentary force at Chinnor, near Thame, H. put himself in the head of a few cavalry that were rallied in haste to oppose Rupert, and in the fight that ensued at Chalgrove Field, received in the first charge a wound, of which he died six days afterward. He was twice married, and by his first wife had three sons and six daughters. H. was modest and brave, sincere and patient, with remarkable quickness of discrimination between the essential and non-essential points in a debated matter.

HAMPDEN-SIDNEY COLLEGE, *hămp'dên-sîd'nî kôl'-lēj*: in Prince Edward co., Va., 70 m. w.s.w. of Richmond: founded by the Presbytery of Hanover 1775, incorporated by the Va. legislature 1783, and erected on grounds given by Peter Johnston 1773. James Madison, Patrick Henry, Paul Carrington, William Cabell, Sr., and Nathaniel Venable were among the incorporators. The original grounds have been increased by gift and purchase till they aggregate 250 acres. It is undenominational in govt., and instruction, though affiliated with the Presb. Church, has always maintained a high standard of scholarship, and allows the students a large share in its govt. In 1902 instruction was given by 9 professors and one fellows. Its presidents have been Rev. S. S. Smith D.D.; Rev. J. B. Smith, D.D.; Rev. Archibald Alexander, D.D.; Rev. Moses Hoge, D.D.; Jonathan Cushing, LL.D.; L. W. Green, D.D.; Rev. J. M. P. Atkinson, D.D.; and Rev. Richard McIlwaine, D.D.

HAMPER, *n. hăm'për* [mid. L. *hănăpērīum*, a recep-

HAMPER--HAMPSTEAD.

tacle for cups: OF. *hanap*, a drinking-vessel—from mid. L. *hanāpus*, a drinking-cup]: a large basket for carrying articles of produce to market.

HAMPER, v. *hām'pēr* [Dut. *haperen*, to stammer, to stick fast; *hapering*, a hindrance: Ger. *hapern*, to stop: Scot. *habble*, a disturbance, a fix]: to shackle; to impede in motion or progress; to perplex or embarrass; to entangle. N. an incumbrance. **HAMPERING**, imp. **HAMPERED**, pp. *-pērd*. *Note*.—**HAMPER** may have the same origin as **HAMBLE**, and be only another spelling of it: Scot. *hammle*, to walk in an ungainly manner: Icel. *hamla*, to mutilate.

HAMPSHIRE, *hāmp'sher*, or **SOUTHAMPTON**, *sūth-hāmp'-ton*, or familiarly **HANTS**, *hānts*: maritime county in s. England; bounded w. by Dorset and Wilts, n. by Berks, e. by Surrey and Sussex, s. by the English Channel; area, including the Isle of Wight, nearly 1,613 sq. m. = 1,070,216 acres 900,000 of which estimated under culture. Pop. (1871) 544,684; (1881) 593,487; (1901) 459,508. Surface is irregular, being traversed by North and South Downs. The s.w. portion of the county, almost wholly detached from the main portion by the Southampton Water, is occupied mainly by the New Forest, 64,000 acres in extent, the property of the crown, and valuable for its supply of oak and beech timber for the British navy. Within the forest, an aboriginal breed of pony is still found. There are remains also of the forests of Bére, Alice Holt, Woolmer, etc. The principal rivers are the Anton or the Test, and the Itchen, which flow s. through the county into the Southampton Water; and the Avon, also flowing s., and forming the w. boundary of the New Forest. The climate of the county is in general mild; and favorable to vegetation; indeed, the climate in the s. of the Isle of Wight is supposed to be milder than that of any other portion of Great Britain. The soil consists in part of poor sands and gravel, and of a mixture of stiff clay and chalk. All the usual crops are produced, hops are cultivated, and the bacon cured here is famous. The manufactures of the county are inconsiderable. Southampton and Portsmouth, both termini of important railways, are chief centres of trade. The county, exclusive of the boroughs and the Isle of Wight sends five members to the house of commons. The New Forest seems to have been fatal to the family of William the Conqueror; there two of his sons, and his grandson, met with sudden and violent deaths. Of the early ages of English history, H. contains many interesting relics: of these the chief are Portchester Castle, at the head of Portsmouth Harbor; Calshot and Hurst Castle, now occupied as coast-guard stations, erected in the time of Henry VIII., and Netley and Beaulieu Abbeys, and the Priory of St. Dicnysius, all in the neighborhood of Southampton. The county is exceedingly rich in Roman remains, as coins, urns, pottery, etc. For further information on the antiquities and history of the towns of H., see **WIGHT, ISLE OF: WINCHESTER: ETC.**

HAMPSTEAD, *hāmp'stēd*: village of England, county of

HAMPTON.

Middlesex, finely situated on a range of hills four m. n.n.w. of London. It was formerly famous for its medicinal springs, and is still a favorite place of residence and of holiday resort among Londoners, attracted by the beauty of its situation and the purity of its air. On the summit of the hill, above the village, is the Heath, which affords extensive and pleasant prospects of the surrounding country. On the Hampstead road, and in the vicinity of the village, many villas have been erected. A house on the Heath, formerly called the Upper Flask Inn, and now a private residence, was at one time the resort of the famous Kit-Kat Club, at which Steele, Addison, Richardson, and others used to assemble. The village of H. was much frequented by Pope, Gay, Johnson, and Akenside, and later by Byron, Leigh Hunt, and Joanna Baillie. Pop. of dist. (1881) 45,436; (1891) 68,425; (1901) 81,902.

HAMPTON, *hămp'ton*: post village and tp. of Rockingham co., N. H.; on the Atlantic Ocean and the Eastern railroad; 10 m. s.s.w. of Portsmouth, 47 m. n.e. of Boston. It has 3 churches, an acad., and manufactories of lumber, shoes, and small articles. Its great attraction is its superb ocean beach, which attracts crowds as a summer resort, and is provided with 8 hotels. Near by the Boar's Head, a rocky promontory, reaches a height of 70 ft. above tide water; Mt. Agamenticus towers n. of the village of Rye; and the picturesque Isles of Shoals are seen scattered near the shore on the n.e. H. was the site of a block-house erected to mark the n.e. boundary of Mass.; was settled 1638. Pop. (1880) 1,184; (1890) 1,330; (1900) 1,209.

HAMPTON, *hămp'ton*: small village, cap. of Elizabeth City co., Va.; on the Chesapeake Bay, giving its name to Hampton Roads (q v.), a southerly branch of Chesapeake Bay, and mouth of James river. The harbor is one of the best on the American coast, defended by Fortress Monroe and Fort Calhoun. H. is 2 m. from Fortress Monroe; and being near the fine beach of Old Point Comfort, and having a climate tempered by the sea, is a favorite resort in summer, and in late winter. Pop. (1900) 3,441. See HAMPTON NORMAL AND AGRICULTURAL INSTITUTE.

HAMP'TON: village of England, county of Middlesex, pleasantly situated on the left bank of the Thames, about 12 m. s.w. of London. The streets are narrow, and the houses irregularly built; in the vicinity, however, there are many noble mansions and beautiful villas. Pop. 4,476.

HAMPTON COURT PALACE, long a royal residence, now usually occupied by persons of rank, reduced in estate, stands about a mile from the village grounds that extends to the Thames. The original palace was erected by Cardinal Wolsey, and came into the possession of Henry VIII., who enlarged it, and formed around it a royal park or chase, which he stocked with deer. Here Edward VI. was born, and here his mother, Queen Jane Seymour, died. Charles I. underwent a portion of his confinement at this palace, and it was the occasional residence of Cromwell, Charles II., and James II. A considerable portion

HAMPTON—HAMPTON COURT CONFERENCE.

of it was rebuilt by William III., and by him the park and gardens were laid out in the formal Dutch style. The palace, as it now stands, consists of three quadrangles with some smaller courts; the great eastern and southern fronts having been erected by Sir Christopher Wren. The picture-gallery comprises Lely's Beauties of the Court of Charles II., valuable specimens of Holbein, Kneller, West, etc., and above all, seven unequalled cartoons by Raphael. The gardens, about 44 acres, not materially altered since they were laid out by William III., present a series of curious raised terraces, formal flower-pots, and long shady and trim arcades. Among the attractions of the garden is a 'maze' or labyrinth. Extensive repairs on the palace were made 1880.

HAMP'TON, WADE: 1754-1835, Feb. 4; b. S. C.: soldier. He served through the revolutionary war with Gens. Sumter and Marion; was member of congress as a democrat 1795-97, 1803-05; presidential elector 1801; appointed col. U. S. army, 1808, brig.gen. 1809, and maj.gen. 1813; in command at New Orleans 1809-12, and on the Canadian frontier 1813-14; resigned 1814, Apr.; and spent the remainder of his life managing his great estate in S. C. At the time of his death he was considered the richest planter in the United States, and his estate comprised 3,000 slaves.

HAMP'TON, WADE: legislator: b. Charleston, S. C., 1818, Mar. 28: grandson of Gen. Wade H. He graduated at the Univ. of S. C., studied law, managed his planting interests in S. C. and Miss., and was a member of both branches of the S. C. legislature. In 1861, he resigned from the state senate, enlisted as a private in the Confederate army, raised the Hampton Legion, commanded it at the first battle of Bull Run, and was appointed brig.gen. In 1862, he served through the Peninsular campaign; 1863 was a third time wounded at Gettysburg, and promoted maj.gen.; 1864 commanded Gen. Lee's cavalry, and was promoted lieut.gen.; and 1865 commanded the rear-guard of the Confederate army retiring before Gen. Sherman's advance n. from Savannah. He was elected gov. of S. C. 1876-78, and U. S. Senator 1878-84, and long served as chairman of the senate committee on coast defenses, and as member of committee on epidemic diseases, fisheries, and military affairs. He died 1902, April 11.

HAMP'TON COURT CONFERENCE: ecclesiastical conference at Hampton Court, shortly after the accession of James I. to the throne of England, in order to the settlement of disputes concerning the national church. The king presided and took a principal part in the conference. He was attended by some of the nobility and highest officers of state, but no one seems to have been permitted to take any part in the proceedings except the king himself and the divines whom he had summoned. Of these, the representatives of the Episcopalian party were more numerous than the Puritans, and the Puritans, though men of known worth and learning, were among the more moder-

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ate of their party. Abp. Whitgift, with eight bishops, six deans, and an archdeacon, appeared on the Episcopalian side: the Puritan cause was maintained by two Oxford professors of divinity, two divines from Cambridge, and with them Patrick Galloway, minister of Perth, Scotland. On the king's accession, the Puritans, entertaining great hopes of release from the rigid enforcement of ceremonies which galled their consciences, and of the reformation of abuses in the church, had addressed a petition to the king, known as the *Millenary Petition*, because it was signed by nearly one thousand ministers in all parts of the country. But the king's intention was not to comply with their wishes, and the Hampton Court Conference seems to have been merely a device for making it appear that their demands had been taken into consideration and found unreasonable. On the first day of the conference (1604, Jan. 12), the Episcopalians alone were admitted to the presence of the king, who demanded their opinion, which they gave, on the third day after, in favor of the existing system in all the parts complained of. The king debated with them on some points; and in the end, decided against them in a few minor particulars, thus maintaining the assertion of his own ecclesiastical supremacy, as well as finding an opportunity for the display of his attainments in theology, though on all important points his verdict was in their favor. Jan. 16, the Puritans were called to the king's presence, but with them some of the Episcopalians, when James debated keenly against the Puritans, using language unworthy of a king or of a Christian, and according to his own account of the matter, 'peppered them soundly.' Jan. 18, both parties were called in, and the royal judgment intimated, which was afterward announced in a proclamation very adverse to the Puritans.

HAMPTON NORMAL AND AGRICULTURAL INSTITUTE: in Hampton, Elizabeth co., Va.; organized 1867, incorporated 1870, and awarded by the state one-third the proceeds of the sale of the congressional land grant 1872. The Institute was originally designed for the education of colored youth, but since 1878 has given instruction to Indian children as well. It was founded by Gen. Samuel Chapman Armstrong (b. Wailuka, Island of Maui, Hawaiian Islands, 1839, Jan. 30, son of a missionary of the A.B.C.F.M.), who at the close of the civil war was sent to Hampton to settle the difficulties that had arisen between the thousands of refugee contrabands who had drifted thither and the returned Confederate families. He was placed in charge of the work of the Freedmen's Bureau (q.v.) at this point, and also was given supervision of 10 counties in e. Va., an officer being appointed under him in each co., who administered civil law in milit. courts, and adjudicated upon the frequently conflicting claims of the two races. A year spent in this service, impressed him with the importance of establishing an educational centre in this locality; and he urged the American Missionary Assoc. to buy land for that purpose, its representatives being already

HAMPTON ROADS.

on the ground. A tract of land comprising a farm of 125 acres, bordering on Hampton river, a little below the old village, was bought 1867, and the institute was opened with Gen Armstrong as principal in the following year. The Freedmen's Bureau aided in the erection of a hall in the form of a Greek cross, 3 stories high, 110 ft. long by 85 ft. wide—the students doing much of the labor and the bricks being made on the farm—1870; and 72 acres more of land were purchased with a part of the state's grant 1872, when the agricultural and mechanical features were added to the original plan of the institute. In 1878, in response to an urgent appeal from Capt. Pratt, U.S.A., of the Carlisle (Penn.) School, an overflow of Indian children were transferred from his school to Hampton, and the two classes of children have since studied and worked amicably together. Several buildings connected with the institution were burned 1879, but have since been replaced with more commodious ones. The curriculum comprises an English, industrial, agricultural, and milit. education, with an ample normal course, as the graduates are expected to become teachers among their own people. The income from all sources is about \$35,000 per annum, but the growing demands on the institution render it necessary that it should have an immediate endowment of at least \$500,000. In 1902 the institution had 1,161 students and 82 officers and teachers, and had graduated 1,140 students since its organization; its productive fund amounted to \$926,636; receipts from benefactions, \$136,367; and the total income, including tuition or incidental charges, was \$184,539. The institute is a hive of industry that deserves liberal support.

HAMPTON ROADS: broad, deep arm of Chesapeake Bay at the mouth of James river, between Hampton and Norfolk, Va.; with Newport News, Old Point Comfort, Fortress Monroe, Fort Wool, and Thimble Shoal lighthouse at or near the entrance to the bay. Since the civil war the locality has become popular as a summer and winter resort, and as a stopping place for northern invalids on the way to and from Fla. Its attractions include the beach, bathing-places, and promenades of Old Point Comfort; the famous Fortress Monroe (q.v.)—much of which is open to the public daily—the old village of Hampton, with its Normal and Agricultural Institute, National Home for Disabled Soldiers and Sailors, and U. S. National Cemetery; and unsurpassed facilities for short excursions, fishing, and yachting. In 1861, Apr., the Confederates seized the U. S. frigate *Merrimac* at Norfolk, covered her hull with railroad iron, and, under the name of *The Virginia*, sent her to attack the U. S. vessels lying in H. R. 1862, Mar. 8. She rammed the frigate *Cumberland*, which sank in 45 minutes; forced the *Congress* on the Shoal, where she was disabled, set on fire, and blown up; but was prevented by her draft from getting within striking distance of the *Minnesota*. On the following morning she reappeared to attack the *Minnesota*, and was suddenly confronted by the new Union iron-clad *Monitor*, just arrived from New York. The *Virginia* rammed the *Monitor* at full speed once, but with-

HAMSTER-HAMULOSE.

out inflicting any damage excepting to her own prow, and then steamed off toward Norfolk. The Union loss in killed, drowned, wounded, and prisoners was 286; the Confederate in killed and wounded about 20.

HAMSTER, n. *hām'stēr* [Ger. *hamster*], (*Cricetus*): genus of rodent quadrupeds of the family *Muridae*, resembling the true mice and rats in their dentition, but having cheek-pouches, and a short hairy tail. The COMMON H. (*Cricetus vulgaris*) is a native of n. Europe and n. Asia, abundant in many parts of Germany and Poland, but not found in Britain, and rare w. of the Rhine. It is of variable color; though generally reddish gray above, the belly black, the feet white, and large white spots on the sides, throat, and breast. It is larger and stouter than the common rat, the tail only about three inches long. It burrows in dry soils,



Hamster (*Cricetus vulgaris*).

each individual making a burrow for itself, to which there are more entrances than one, and which also contains several holes or compartments, one of them lined with straw or hay, in which it sleeps, and some of them capacious enough for the storing of large quantities of grain or other provisions—to the amount of 60 pounds of corn or a hundredweight of beans—which the animal carries thither in its cheek-pouches, and on which it feeds during the milder parts of winter, spending the most severe part of that season in a state of torpid hibernation. It is a great pest to the farmers of the countries in which it abounds, and the object of their unceasing hostility; but it is very prolific, producing two or three broods in the year, and 16 or 18 at a birth. It feeds generally on vegetable food, as leaves, seed, etc., though it is said also sometimes to devour small quadrupeds, birds, lizards, frogs, etc. The H. carries away pease and other legumes in pod, but shells them and deposits only the edible portion in its store. Its labors and depredations are wrought by night. It is extremely fierce and pugnacious, and exhibits more than the pertinacity of the bull-dog. The skins of hamsters are of some value.—There are several other smaller species of the genus, mostly Asiatic.

HAMSTRING: see under HAM 1.

HAMULOSE, a. *hām'ū-lōs* [L. *hāmūlus*, a small hook—from *hāmūs*, a hook]: in *bot.*, covered with little hooks. HAMULUS, n. *hām'ū-lūs*, a hooked bristle; in *anat.*, a hook-like process. HAMULAR, a. *hām'ū-lēr*, in *anat.*,

HAN—HANCOCK.

having a hook-like appearance; having small hooks: see HAMOUS.

HAN, *hán*: the most celebrated of the 26 dynasties of China (B.C. 206—A.D. 220), founded by Kau-tsu, whose accession to the empire is regarded as the commencement of Chinese modern history. The number and character of its heroes and literati are superior to most other periods, and to this day the term *Sons of Han* is the favorite and most common appellation of the Chinese to themselves

HANAFORD, PHEBE ANN: an American minister; b. in Nantucket, Mass., 1829, May 6; became a teacher and writer at fifteen; ordained in Universalist church in 1868, being the first woman to become a member of the Universalist clergy; held pastorates in Hingham and Waltham, Mass., Hartford, Conn., and Jersey City, N. J.; and was a member and officer of many literary and temperance societies. Her works include *Life of Abraham Lincoln*; *Life of George Peabody*; *Women of the Century*; *Ordination Book*, etc.

HANAU, *há'now*: industrious and flourishing town in the Prussian province of Hessen-Nassau, near the confluence of the Kinzig and the Main, 12 m. e.n.e. of Frankfurt by rail. It is divided into the Old and New Town, the latter founded 1597, by Prot. refugees from Belgium, who introduced the manufacture of woolen and silken goods, which still flourishes. The town of H. stands pre-eminent in Germany for its jewellery, and gold and silver wares, it has also extensive manufactories of carpets, gloves, leather, cards, paper, hats, cutlery, tobacco, and cigars. H. has broad and straight streets: the buildings most worthy of note are the ancient castle; a gymnasium, in which the Wetterau Library is located; and the electoral palace of Philippsruhe, famed for its orangeries, and once the property of Napoleon's sister, Princess Pauline Borghese. In the neighborhood of the town, and on the left bank of the Main, are the baths of Wilhelmsbad and the village of Rumpenheim, with its palace and gardens. H. was the scene of the last battles which Napoleon fought in Germany, 1813, Oct. 30, 31, when, in his retreat from Leipsic, after a hard-fought battle, he totally defeated the allies. Pop. of H. (1880) 23,086; (1890) 25,027.

HANBALITES, n. *hán'ba-līts* [from Ahmed Ibin *Hanbal*, 8th c.]: Mohammedan sect, branch of the Sunnites.

HANCES, n. plu. *hán'sēs* [see HAUNCH]: the ends of elliptical arches; in a *ship*, the falls of the poop-banisters.

HANCHINOL, *hán'chín-ol* (*Heimia salicifolia*): a plant of nat. ord. *Lythaceæ*, with lanceolate, frequently ternate leaves, and flowers on one-flowered stalks. It is a native of Mexico, and is much esteemed as a medicine for its very powerful sudorific and diuretic properties. It is highly extolled as an antisiphilitic.

HANCOCK, *hán-kok*, JOHN, LL.D.: 1737, Jan. 12—1793, Oct. 8; b. Quincy, Mass.: signer of the Declaration

HANCOCK.

of Independence. He was a son of the Rev. John H., and nephew of Thomas H.; graduated at Harvard College 1754; entered his uncle's counting-house, and inherited his business and the greater part of his fortune. In 1760 he witnessed the coronation of George III.; 1766 was elected a member of the Mass. legislature; 1768 had his vessel *Liberty* seized by the royal commissioners of customs for an alleged evasion of the commercial laws, the seizure leading to a riot; and 1770 he delivered a powerful address at the funeral of the victims of the Boston massacre, and served on the committee of citizens who demanded of the royal gov. the removal of the troops from the city. His fearlessness made him a marked man, and his fellow-patriots were quick to avail themselves of his influence and co-operation. He was elected a member of the provincial congress 1774, became its pres., and with Samuel Adams, a colleague, was the object of the royal expedition to Concord which led to the battle of Lexington 1775, Apr. Both of these patriots were excluded by name in Gen. Gage's offer of pardon. H. was a member of the continental congress 1775-80, 1785-6, and pres. 1775, May-1777, Oct. He was one of the first signers of the Declaration of Independence, and the first publication of it bore only his name as pres. of congress. In 1776 he became maj.gen. of Mass. militia; 1778 commanded the Mass. troops in the R. I. expedition; 1780 was a member of the state constitutional convention; 1780-85, 1787-93 gov. of Mass.; and 1789 received 4 electoral votes in the presidential election. He received the degree LL D. from Brown Univ. 1788 and Harvard College 1792.

HANCOCK, WINFIELD SCOTT, LL.D.: 1824, Feb. 14-1886, Feb. 9; b. Montgomery Square, Montgomery co., Penn.; soldier. He was educated in the Norristown (Penn.) high-school and acad., graduated at the U.S. Milit. Acad., 1844, brevetted 2d lieut. 6th U.S. inf., and was on duty in the Indian Terr. and on the Mexican frontier till the summer of 1847, when he accompanied Gen. Scott's army on the march to Mexico City. He took part in the battles of San Antonio, Churubusco, Molino del Rey, and Contreras, and the assault and capture of the capital; and was brevetted 1st lieut. for conspicuous gallantry. He was quartermaster and adjt. of his regt. chiefly at St. Louis 1848-55, was promoted capt. and ordered on the Seminole campaign in Fla. 1855; served through the troubles in Kan. 1857-8; and was stationed in Cal. 1859-61. In 1861, Sep., he was appointed brig.gen. of vols., and spent the autumn and winter aiding the organization of the Army of the Potomac. He was one of the most conspicuous and successful generals in the peninsular and Md. campaigns; received brevets of maj., lieut.col., and col. U. S. A. for services at Williamsburg, Golding's Farm, Garnett's Hill, Savage's Station, White Oak Swamp, Centreville, South Mountain, and Antietam; commanded the 1st div. 2d corps in the second day's Antietam battle, and was promoted maj.gen. of vols. 1862, Nov. 29. He led his div. in the storming of Marye's Heights, Fredericksburg, 1862,

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Dec. 13, and at Chancellorsville 1863, May, was given command of the second corps 1863, June, selected the battle-ground of Gettysburg, fought through the two first days there, and after repulsing Gen. Lee's final assault on the third day fell wounded. He received the thanks of congress for his Gettysburg services and was compelled by his wound to remain inactive till 1863, Dec. After a recruiting mission to the north he resumed command 1864, Mar.; was in the battles of the Wilderness (May 5-7) the Po (10), and Spottsylvania Court House (12), where he made a famous charge and captured 4,000 prisoners, 20 cannons, and several thousand small arms; and thence till June 17 crossed the North Anna, was in the second battle of Cold Harbor, and the assault on the Petersburg lines. He was promoted brig.gen., U. S. A., 1864, Aug. 12, commanded in the actions at Deep Bottom, Ream's Station, and Boydton Plank Road; and 1864, Nov. 26—1865, Feb. 26, was engaged in recruiting a veteran corps of 50,000 men. After the assassination of Pres. Lincoln he was in command of Washington; 1865, July—1866, Aug., of the middle dept.; 1866, Aug—1867, Sep., of the dept. of Mo.; 1867, Sep.—1868, Mar., of the dept. of the Gulf; 1868 Mar.—1869, Mar., of the div. of the Atlantic; 1869-72, of the dept. of Dak.; and 1872 till his death, of the div. of the Atlantic. He was promoted maj.gen., U. S. A., 1866, July 26, defeated as democratic candidate for pres. by Gen. Garfield, 1880, Nov.; and was commander of the milit. funeral of Gen Grant, 1885.

HAND.

HAND, n. *hǣnd* [Icel. *hönd*; Goth. *handus*; Ger *hand*, the hand—probably named as the instrument of seizing; Icel. *henda*; L. *prehendĕrĕ*, to seize]: *literally*, the part of the body which seizes and holds; the broad extremity of the arm below the wrist; the palm and fingers; side; part; act; power; agency; style of writing; a workman; cards held in a game; a measure of four inches used in measuring the height of horses = a hand's-breadth: **V** to give or transmit with the hand; to guide or lead by the hand; to manage; to furl, said of a sail: **ADJ.** pertaining to or used by the hand—much used as the first element of a compound word. **HAND'ING**, imp. **HAND'ED**, pp.: **ADJ.** having the greatest power or dexterity in one of the hands. **HAND'LESS**, a. useless with the hands. **HAND'FUL**, n. *-fŭl*, as much as the closed hand will contain; a small number. **CLEAN HANDS**, innocence; blamelessness. **HAND-BARROW**, a barrow carried with the hands having two handles at each end; also applied to the barrow with one wheel driven with the hands. **HAND-BELL**, a bell rung by the hand, and not by means of a bell-pull and wires. **HANDBILL**, a small printed sheet distributed to persons by hand, or from house to house. **HANDBOOK**, an elementary book easily carried and used; a manual; a guide for travellers. **HAND'S-BREADTH**, a measure of 4 inches; the breadth of a hand. **HAND-FASTING**, anc. English term for betrothment, now disused. **HAND-GALLOP**, an easy gallop in which the rate of speed is regulated by pressing the bridle with the hand. **HAND-GEAR**, the contrivances for working steam-engine valves. **HANDS HIGH**, measure of height by the hand's-breadth, as applied to a horse. **HAND-LEAD**, among *seamen*, the instrument for sounding when passing through shallow water. **HANDLOOM**, *-lóm*, a loom not worked by steam, as opposed to *power-loom*, one worked by steam. **HAND-MADE**, made by the hand and not by a machine. **HAND-RAIL**, a rail supported by balusters, as in staircases. **HANDSPIKE**, *-spĭk*, a wooden lever employed by seamen in turning the capstan. **HANDWRITING**, the form of writing peculiar to a person; any writing (see **HANDWRITING**, in **LAW**). **AT HAND**, near; within reach. **BY HAND**, with the hands; not by tools or instruments, etc. **FROM HAND TO HAND**, from one person to another. **HAND IN HAND**, in union; conjointly. **HAND TO HAND**, close union; close fight. **HANDS OFF**, keep off; forbear. **IN HAND**, present payment; in possession; in the state of execution; in a state of discipline; under restraint. **LAYING ON OF HANDS**, a form used in consecrating, setting apart, or blessing, by placing the hands upon (see **HANDS**, **IMPOSITION OF**). **OFF-HAND**, without delay, hesitation, or difficulty; immediately. **OFF ONE'S HANDS**, out of one's possession or care. **ON HAND**, in present possession. **ON ALL HANDS**, on every side; by all parties. **OUT OF HAND**, immediately. **PUTTING THE HAND UNDER THE THIGH**, an anc. ceremony used in swearing. **HEAVY HAND**, with much severity; great trouble and distress. **LIGHT HAND**, with gentleness; without severity. **RIGHT HAND**, place of honor or power. **SLACK HAND**, idleness: carelessness. **STRICT HAND**, severe dis-

HAND.

ripline, rigorous government. To HIS or MY HAND, in readiness; already prepared. UNDER HIS or MY HAND, with the proper writing or signature of the name. To BE HAND AND GLOVE, to be intimate and familiar with. To BEAR A HAND, to give help quickly. To BEAR IN HAND, in *OE.*, to elude. To BRING UP BY THE HAND, to bring or rear up, as a lamb, without suckling it. To CHANGE HANDS, to change sides or owners. To CLAP HANDS, to express joy. To COME TO HAND, to be received. To GIVE ONE'S HAND IN MARRIAGE, to take in marriage; to marry. To HAND DOWN, to transmit in succession. To HAVE A HAND IN, to have a part or concern in doing. To HAVE ONE'S HANDS FULL, to be pressed by much labor or by many engagements. To KISS THE HAND, to worship idols; to bid an affectionate adieu. To LAY HANDS ON, to seize. To LEND A HAND, to give assistance. To LIVE FROM HAND TO MOUTH, to live barely and uncertainly as to the supply of daily food; to live up fully to one's income, or upon daily resources alone. To SET THE HAND TO, to engage in. To STRIKE HANDS, to make a contract; to become surety for. To TAKE IN HAND, to attempt; to undertake. To WASH ONE'S HANDS, to withdraw from an affair.—SYN. of 'hand, n.': measure; quarter; rate; price; performance; workmanship; nearness; advantage; gain; superiority; competition; contest; transmission; conveyance; possession; influence; management; agent; manager; giver; receiver; actor; soldier; writing; discipline; restraint.

HAND, THE: bodily organ of man which seizes and holds. The genus *Homo*, or MAN, takes rank in the classification of mammals as a distinct order, BIMANA, in consequence of man being the only animal possessing *two hands*. At first sight it might be considered that four-handed animals—the monkeys, apes, and their allies, which are placed by zoologists in the order QUADRUMANA—were superior to those which possess only two hands, but this is far from the fact. None of these four hands are adapted to the variety of actions which the human H. is capable of performing, and they all are, to some degree, required for support and locomotion; so that while in the higher forms of the quadrumana the extremities present an approximation in structure to those of man, in the lower they gradually tend to resemble the ordinary quadrupedal type. 'That,' says Cuvier, 'which constitutes the *hand*, properly so called, is the faculty of opposing the thumb to the other fingers, so as to seize upon the most minute objects—a faculty which is carried to its highest degree of perfection in man, in whom the whole anterior extremity is free, and can be employed in prehension.' The peculiar prehensile power of the human H. is dependent chiefly on the length, power, and mobility of the thumb, which can be brought into exact opposition to the extremities of all the fingers, whether separately or grouped together.

Before describing the H. itself, a few words are requisite on the upper extremity generally, of which the H. may be regarded as the essential part.

HAND.

The general arrangement of the bones of the arm is shown in fig. 1. The general plan of the osseous framework of the upper and lower limb is very similar. The *humerus*

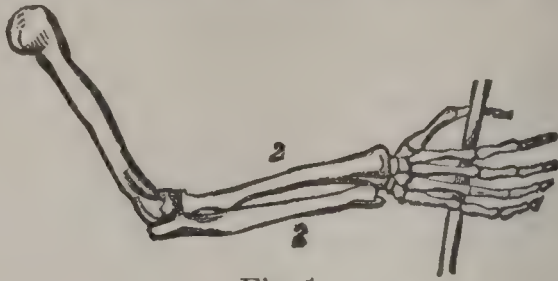


Fig. 1.

1, the humerus; 2, the radius; 3, the ulna. Beyond the distal ends of the radius and ulna come the carpal bones, the metacarpal bones, and the phalanges.

or arm-bone corresponds to the *femur* or thigh-bone; the lower end of the humerus is connected with the two bones of the forearm, the *radius* and the *ulna*, which correspond with the two bones of the leg. Then come the *carpal* bones, the *metacarpal* bones, and the *phalanges*, just as in the foot are *tarsal* bones, *metatarsal* bones, and *phalanges*.

In fig. 2 (from Humphrey's *Human Foot and Human Hand*) is a diagram showing the way in which the bones of

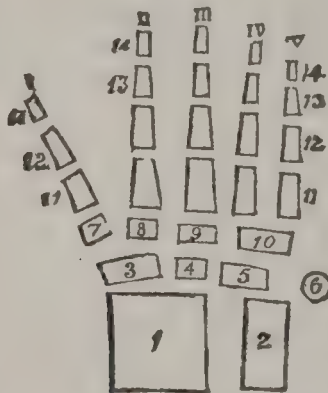


Fig. 2.

Diagram of the bones of the hand, with the ends of the radius and ulna.

1, end of radius; 2, end of ulna; 3, scaphoid; 4, semilunar; 5, cuneiform; 6, pisiform; 7, trapezium; 8, trapezoid; 9, magnum; 10, unciform; 11, 11, metacarpal bones; 12, 12, first row of phalanges; 13, 13, second row; 14, 14, third row; I, thumb; II, forefinger, etc.; V, little-finger.

the H. are arranged. The carpal bones (3 to 10 in the figure) are eight in number, arranged in the wrist in two rows. The first or upper row consists practically of three bones (3, 4, 5), the fourth (6) being regarded as belonging to the class of *Sesamoid Bones* (q.v.), and the second row consists of four bones (7, 8, 9, 10); so that, excluding the pisiform bone (6), the carpal and the tarsal bones correspond in number. As we commonly term the palm the *front* of the H., the thumb becomes conventionally the *outer*, and the little-finger the *inner* digit; but according to the rules of comparative anatomy, and in order to compare the H. and foot, we ought to reverse these terms. The *outer* (3) of the carpal bones of the first row supports

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(through the intervention of 7 and 8) the bones of the thumb and forefinger (I and II), and constitutes with them the *outer* division of the H. The inner (5) of the carpal bones bears the little, and the next (the ring) finger (v. and iv), and constitutes with them the *inner* division of the H., while the middle one (4) bears the middle-finger (III), and belongs to the *middle* division of the H. We see from this figure, likewise from fig. 1, that the two outer bones (3 and 4) are connected with the radius, while the inner bone (5) is connected (indirectly by a thick ligament) with the ulna.

Anatomical details regarding the individual carpal bones are unnecessary here. Collectively, they are so arranged that the carpus presents a dorsal convex surface, on which the tendons of the extensor muscles of the fingers play, and a palmar concave surface on which the tendons of the flexor muscles lie. The several bones are joined to one another—each bone being united to three or more others—by a large extent of surface, and are girded together by strong ligamentous bands. The wrist is thus as strong as if it had been constructed of one solid piece of bone, while the slight gliding movements which occur between the several bones give it an elasticity which serves to break the shocks that result from falls upon the H. The uppermost surface of the first row of carpal bones is convex, and this convex surface is received into a wide cup or socket, formed by the lower articular surface of the radius, and by a ligament passing from that bone to the ulna.

The metacarpal bones and the phalanges require no special description. Like the great-toe, the thumb has only two phalanges, while each of the other digits has three.

The various movements of which the H. is capable, may be divided into (1) the different directions in which the H. collectively can be moved; (2) the movements of which the H. itself, without reference to the arm, is capable.

The *scapula* or shoulder-blade, with which the principal arm-bone articulates, is itself movable to a considerable extent on the surface of the ribs on which it rests. Again, the socket in which the nearly spherical head of the *humerus* or arm-bone lies is very shallow—not unlike the cup in the well-known toy *cup-and ball*—and the arrangements of the shoulder-joint generally are such as to permit so great a variety, and so extensive a range of movements, that we are able to apply the H. to almost every part of the body. This freedom of motion is due in great degree to the clavicles or collar-bones, which, by steadying the shoulder-blades, and keeping the shoulders apart, afford a fixed point for the various muscles which we employ in raising the arms, in folding them over the chest, in the act of hugging, etc. The movement at the next junction of bones, the elbow-joint, is very different from that at the shoulder. The shoulder is termed, from its construction, a ball-and-socket joint, and admits of motion in all directions, within definite limits; while the elbow is a hinge-joint, and merely admits of bending and straighten-

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ing, or, in other words, of motion in one plane. We have next to consider a class of movements of the forearm and H., to which there is nothing analogous (at least to any material extent) in the leg. The movements in question are called 'pronation and supination.' In *pronation* (derived from *pronus*, with the face downward), we turn the palm of the H. downward, as in picking up any substance from the table; in *supination* (derived from *supinus*, with the face upward), we turn the palm upward, as for the purpose of receiving anything that may be placed in it.

These movements of pronation and supination are so important to the usefulness of the H., that we must notice the

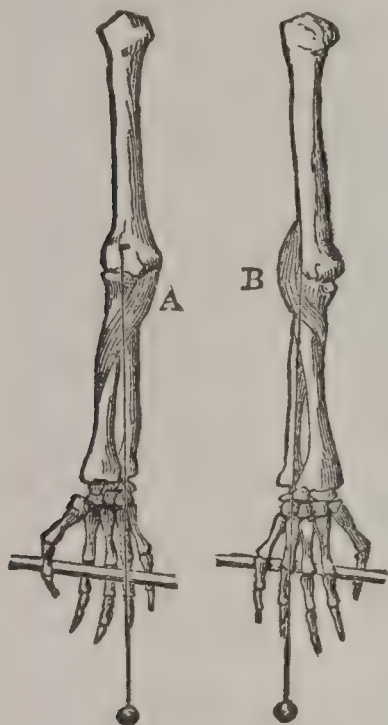


Fig. 3.

Fig. 4.

Fig. 3.

The upper limb, with the forearm and hand in the state of supination. A, the long supinator muscle.

Fig. 4.

The same in a state of pronation. B, the short supinator muscle.

In both figures, a plumb-line from the outer condyle of the humerus is found to traverse the lower end of the ulna and the ring-finger.

(From Humphry, *Op. cit.*)

three muscles by which they are chiefly affected. One of the three muscles (A, fig. 3) passes from a projecting process on the inner side of the arm-bone, at its lower end, to the outer edge of the middle of the radius. Its contraction causes the radius to roll over, or in front of, the ulna: it thus pronates the H., and is called a *pronator* muscle. Another muscle (B, fig. 4) passes from a projecting process on the outer side of the arm-bone to the inner edge of the radius near its upper part. It runs therefore in an opposite direction to the former muscle, and produces an opposite effect, rolling the radius and the H. back into the position of supination; hence it is called a *supinator* muscle. The third is a very powerful muscle, termed the *Biceps* (q.v.), which not only bends the elbow, but from the mode in which its tendon is inserted into the inner side of the radius (see fig. 5), 'also rotates the radius so as to supinate the H.; and it gives great power to that movement. When we turn a screw, or drive a gimlet, or draw a cork, we always employ the *supinating* movement of the H. for the purpose; and all screws, gimlets, and implements of the like kind are made to turn in a manner suited

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to that movement of the right H.; because mechanicians have observed that we have more power to supinate the H. than to pronate it.' Supination can be performed to its full extent only by man, and even in man it is not the natural or habitual position; monkeys can partially effect the movement, and in most of the lower animals the part corresponding anatomically to the H. is constantly in a state of pronation.

The movements of which the H. itself, without reference to the arm, are capable, are very numerous, and in this respect differ considerably from the corresponding movements of the foot. Thus we can bend the fingers down upon the palm, or we can extend them beyond the straight line; we can separate them from one another to a consider-



Fig. 5.

The superficial muscles of the forearm.

- 1, the lower part of the biceps; 2, its tendon, a little above its insertion into the radius; 5, the radial flexor of the wrist; 6, the long palmar muscle, spreading out (at 9) into the palmar fascia; 8, the ulnar flexor of the wrist; 13, the long supinator muscle.

able extent, and we can close them with considerable force. The wrist and H. are bent forward or flexed upon the forearm by three muscles which pass downward from the inner condyle or expanded end of the humerus, and are termed by the *radial flexor*, the *ulnar flexor*, and the *long palmar* muscles. The first two of these muscles are inserted into wrist-bones on the radial and ulnar sides respectively, while the third expands into a fan-like *fascia*

HANDCUFFS.

or membrane in the palm of the H., and thus serves both to support the skin of the palm and to protect the nerves and vessels which lie below it. Beneath the palmar fascia lie two sets of *flexor* muscles of the fingers, and they present so beautiful a mechanical arrangement as to merit special notice.

The *superficial* or *perforated flexor* muscle passes down the front of the forearm and divides into four tendons, which become apparent after the removal of the palmar fascia, and are inserted into the second phalanges of the fingers, each tendon splitting at its termination, to give passage to the similar tendons of the *deep* or *perforating flexor* muscle which passes from the upper part of the ulna to be inserted into the last phalanx of each finger. This arrangement of the tendons of the superficial and deep flexor muscles is shown in fig. 6. These *flexor* muscles are antagonized by the *common extensor* muscle of the fingers, which, like the flexors, divides into four tendons, one for each finger. Besides these there is a special *extensor* of the index-finger, and a series of muscles forming the ball of the thumb, which move that organ in almost every direction, and various small slips giving lateral and other movements to the fingers.

The H. is very richly supplied with blood-vessels and nerves. There is no other part of the body where the



Fig. 6.

To show the perforation of one of the tendons of the superficial flexor muscle (which is inserted into the second phalanx), in order to allow the corresponding tendon of the deep flexor to pass onwards to be inserted in the last phalanx.

sense of touch is so acute as at the tips of the fingers; for the special arrangements which make this part of the H. peculiarly important in relation to our knowledge of external objects, see TOUCH, ORGANS AND SENSE OF.

Our notice of the comparative anatomy of the Foot (q.v.) renders it unnecessary to trace the modifications presented in the lower animals by the bones corresponding to those of the human H.; as the carpal and metacarpal bones with their phalanges undergo adaptations of form to meet the individual wants of the animal, much in the same manner as the tarsal and metatarsal bones and their phalanges. Thus, it is readily seen that the so-called knee of the horse, for example, is the carpus; and the metacarpel bones and phalanges can be traced. See BROKEN KNEES: HORSE: also Humphry, *On the Human Foot and Human Hand*.

HANDCUFFS, n. *händ kiffs* [*hand*, and *cuff* 2: OE. *cops*, a fether, *coffes*, cuffs]: a ring or chain to confine the hands; a manacle. HANDCUFF, v. to confine the hands with a ring

HÄNDEL.

or chain; to manacle. HAND'CUFFING, imp. HAND'CUFFED, pp. -*küft*.

HÄNDEL, *hën'dél*, GEORGE FREDERICK: 1685, Feb. 23—1759, Apr. 13, b. Halle, Upper Saxony: one of the greatest of musical composers and musicians. Though a native of Germany, he spent so large a portion of his life in England, where he composed his greatest works, that Britain may almost claim him as her own. Certainly his influence on English musical development is almost unequalled. In one sense, he turned it from its proper national style into his own grand yet foreign channel. He manifested in infancy an extraordinary passion for music, and at the age of seven, having accompanied his father on a visit to the Duke of Saxe-Weissenfels, he found his way to an organ, where he was heard by the duke, who remonstrated with his father against further opposition to a genius of so decided a character. He was then placed under a music-teacher, Zachau, with whom he remained until he was 13, composing every week cantatas for the church-service, and learning all instruments, especially the organ. In 1698, he was sent to Berlin, where the Elector of Brandenburg was so impressed with his talents that he wished to send him to Italy. As his father would not accept this offer, he returned to Halle, whence, on the death of his father, he went to Hamburg 1703. Here he played a violin in the orchestra of the opera. He was soon its director, and composed his first opera, *Almira*, rapidly followed by *Nero* and *Florinda*. His violent temper involved him in a quarrel with a brother-composer, which resulted in a duel; the sword of his adversary was stopped by a button or a music score. He next visited Italy. In Florence, he composed *Rodrigo*, 1707. His *Agrippina*, composed in Venice, had a run of 30 nights. At Rome, he was received at Cardinal Ottoboni's where he heard Corelli, and beat him with his own violin, for not playing to suit him in his *Il Trionfo del Tempo*. In 1710, he returned to Germany, where he was appointed chapel-master to the Elector of Hanover, afterward George I. of England. At the close of the same year H. went to England, where he was patronized by Queen Anne and the nobility. He composed *Rinaldo*, *Pastor Fido*, *Theseus* and 1715, *Amadida Gaula*, in which Nicolini and Valentini first sang in England. In 1718 he undertook the direction of the Duke of Chandos's chapel at Cannons, where he wrote *Acis and Galatea*, *Esther*, the first English oratorio, and numerous concertos, anthems, fugues, etc. A Royal Acad. of Music for the cultivation of the opera, was formed 1720, and after some competition, was placed under H.'s management. This undertaking, and other opera speculations, in which H. was engaged, proved very unsuccessful. H. lost £10,000, and was compelled to retire to Aix-la-Chapelle on account of his health. The oratorio *Deborah* was composed 1733, and was followed by *Alexander's Feast*, *Saul*, *Israel in Egypt*, and (1740) *L'Allegro e Penseroso*. In the end of 1741 he went to Dublin, where his *Messiah*, composed in that year, was produced for charitable purposes. He remained in Dublin about nine months, and received generous support. From

HAND-GLASS—HANDICAP.

this time success attended all his undertakings. On his return to London he composed his *Samson*; and the *Messiah* was performed for the benefit of the Foundling Hospital. It was repeated annually for the same purpose, and from 1749 to 1777 brought to that charity £10,300. 'The *Messiah* has been called 'the musical equivalent of Milton's *Paradise Lost*.' H. became blind, but he still composed, and played on the organ, being led to his seat, and forward to receive the plaudits of the audience. He assisted at the performance of one of his oratorios Apr. 6; and he died as he wished, on Good Friday, 1759, Apr. 13, 'in hopes,' he said, 'of meeting his good God, his sweet Lord and Savior, on the day of his resurrection.' Among his works, which are in the Queen's Library, are 50 operas—8 German, 26 Italian, 16 English; 20 oratorios, a great quantity of church-music, cantatas, songs, and instrumental pieces. He was a wonderful musician, and his compositions are often full of grandeur and sublimity. His operas are seldom performed, but his oratorios hold the same place in music that in the English drama is accorded to the plays of Shakespeare; and the Handel Festivals, lasting several days, are the grandest musical exhibitions of our times. H. was a man of high intelligence and wide literary culture. He was upright and outspoken, qualities which sometimes brought him into personal antagonism, especially with careless or indolent performers, or with those who were willing to pander to a low public taste. See Chrysander's *Georg Friedrich H.* (1858-67).

HAND'-GLASS in Gardening: useful implement for protection of tender plants. They are of various kinds, some of them simple bells of glass, with a knob at top, for convenience of lifting them, used chiefly for covering cuttings in the green-house or stove, until they *strike* or send forth roots; others consist of metal frames—zinc, lead, iron; or copper—filled with panes of glass, and sometimes large enough to be used for covering tree-pæonies, acacias, and other tender shrubs.

HANDICAP, v. *hăn'dĩ-kăp* [*hand-in-cap*]: to weigh or bear down by a weight; to place on such a footing as to have an equal chance. **HAN'DICAPPING**, imp. **HAN'DICAPPED**, pp. *-kăpt*. **HAN'DICAPPER**, n. *-kăp-er*, one who settles the conditions so as to equalize the chances of success. **HANDICAP**, n. *hăn'dĩ-kăp*, a race in which the horses carry different weights according to age and character for speed, or are placed at different distances, or start at different times, etc., with the view of equalizing the chances as nearly as possible: the term is said to have been originally applied to the method of settling a bargain by putting a *hand* with money into a *cap*. *Note*.—An origin of **HANDICAP** is suggested from Gael. *andeigh-ceap*, a weight, an obstruction—from *andeigh*, after or afterwards; *ceap*, to obstruct, to stop. Such a form could easily be corrupted into **HANDICAP**: also compare L. *andabătă*, a gladiator who fought blind-folded.—*Handicapping* in various games and sports, denotes the placing of competitors, good, bad, and medi-

HANDICAP.

ocre, on such a footing that all shall have, as nearly as possible, an equal chance of winning. Thus, in horse-racing, when the speed of one horse has been ascertained to be greatly superior to that of another, the swifter of the two, in a handicap race, is made to carry extra weight to an amount that shall be deemed sufficient to reduce its speed to equality with that of its antagonist. Where the public performances of a horse have been exceptionally good, and when both speed and endurance are found to be unusually great, the penalty inflicted in all future handicaps is very great, amounting sometimes to a weight considerably above that of very inferior competitors. The *beau idéal* of a handicap would thus be one in which the merits of the animals should be so nicely discriminated, and the weights so accurately adjusted, that all the competitors should pass the winning-post at the same time, and thus run a 'dead-heat.' This is, of course, impossible in practice, but it is nevertheless the ideal at which the handicapper must aim; and the nearer he approaches it the more perfect is his work. In the United States, horses carry less weight in May than in the following months, the weights increasing with the growth of the year and the horse. In general a two-year old stallion has to carry 75 pounds in July, a three-year old 105, four-year old 118, five-year old and upward 120. In steeple-chasing the weights range from 125 to 180 pounds. But the maximum is left in the hands of the handicapper, who apportions to each horse a weight corresponding to its public performances, age, and sex. No appeal is allowed from his decision, nor can he be called upon to give the reasons that may have actuated him in allocating weights. Vested with such arbitrary power, he should be a person of sound judgment, unquestionable integrity, and thorough experience. His usual mode of constructing a handicap is to select the best and the worst horse entered for a race, placing such a weight upon the former as he supposes will bring it down to equal the latter's minimum of allowance. He then proceeds to adjust the weights of the intermediate horses according to their varied merits.

When the handicaps have been published, no alteration can take place in the relative weights of the horses entered, unless one of these should prove a winner during the time intervening between the issue of the handicap and the period of its decision; in which case, extra weight, varying from three pounds and more, may have to be carried by the winning horse, as a penalty for his intermediate victory. Each jockey, with his saddle, etc., is weighed prior to starting, the exact extra weight to be carried being made up by lead strips let into the saddle-flaps. He is also weighed *after* the race, to prevent the possibility of his having carried either more or less than his proper weight; a precaution, moreover, that is rigorously observed after every kind of race, whether handicap or otherwise.

Though principally pertaining to horse-racing, handicapping is resorted to in many other sports. In pigeon-shooting from traps, the shooter stands, as a rule, 21 yards from

HANDICRAFT—HANDMAID.

the traps, that being the distance usually allowed to average performers. The more skilful the shooter, the further back has he to stand from the traps: the distance allowed by an acknowledged 'crack' shot to his inferiors ranging from 1 to 10 or even 15 yards. In games, such as chess and draughts, certain 'men' are taken away from the superior player; in billiards, the better of two allows his antagonist a certain number of 'points,' so as to equalize or handicap their respective games; at cricket, an eleven, such as the eleven of All England, will sometimes play against twenty-two others, the competition being at times very close. In swimming and in pedestrianism, the inferior competitors are allowed a certain 'law,' or start; in yachting, the vessel of greater tonnage is handicapped with lesser ones, by allowing them extra time for the performance of the race. For instance, a 50 and a 30 ton yacht start for a race, the former allowing the latter, say, five minutes. They *start together*, and the heavier yacht reaches home, say, three minutes ahead of the lighter; in that case the lighter yacht's handicap of five minutes gives her the race by two minutes, though she was last to reach home. The principal of handicapping is the same, whether applied to field sports or home amusements; it is the art of endeavoring to equalize by certain penalties, the good, bad, and mediocre.

HANDICRAFT, n. *hǎn'dī-kraft* [AS. *handcraft*: *handy*, and *craft*]: work performed by the hand; in *OE.*, a workman: **ADJ.** belonging to a trade. **HAN'DICRAFTSMAN**, n. an artisan; a mechanic.

HANDIWORK, n. *hǎn'dī-werk* [AS. *handgeweorc*—from *hand*; *geweorc* or *weorc*, work]: work of the hands; work of skill or wisdom.

HANDKERCHIEF, n. *hǎn'kēr-chīf* [*hand*, and *kerchief*]: a piece of cloth, usually silk or linen, carried in the pocket or worn around the neck.

HANDLE, n. *hǎn'dl* [Ger. *handeln*; Dut. *handelen*; Icel. *höndla*, to act, to trade: AS. *handlian*, to touch—from *hand*]: that part of anything held in the hand when used; that of which use is made; the instrument by which a purpose is effected: **V.** to feel, use, or hold with the hand; to make familiar by frequent touching; to treat or discourse on; to treat or use well or ill; to manage. **HANDLING**, imp. *hǎnd'ling*. **N.** in the *fine arts*, the method of manipulation peculiar to each artist in the use of his pencil. **HANDLED**, pp *hǎn'dld*. **HANDLE TO HIS NAME**, a title, as Doctor, Sir, Lord, etc.

HANDLEY, *hǎnd'li*, **GEORGE**: 1752, Feb. 9—1793, Sep. 17; b. near Sheffield, England: soldier. He removed to Savannah 1775, was appointed capt. of the Ga. continental battery 1776, became lieut.col., served through the revolutionary war, was a prisoner in the hands of the British at Charleston, was sheriff of Richmond co. and member of the legislature after the war, inspector-gen. 1787, gov. 1788, and collector of the port of Brunswick 1789–93.

HANDMAID, n. *hǎnd'māid*, or **HAND'MAIDEN**, n. *-mā'dn*

HANDS—HANDSOME.

[*hand*, and *maid*, or *maiden*]: a female servant or attendant.

HANDS, IMPOSITION OF, or LAYING ON OF: ceremony both in ancient and in modern religious use, symbolizing the conferring of certain inward and, generally speaking, spiritual gifts. In the consecration of Aaron and his sons, they are directed to lay their hands upon the heads of the victims which were to be offered in sacrifice (Ex. xxix. 10, 15, 19). Moses set Joshua apart as the leader of the people by 'laying his hands upon his head' (Num. xxvii. 23). The Lord Jesus is entreated to heal the ruler's daughter (Matt. ix. 18) by the same ceremony. This is the rite which Christ himself adopts in blessing the little children (Matt. xix. 15). The gift of the Holy Spirit was imparted with the same ceremony (Acts viii. 17), and the ministers placed by the apostles in the newly-founded churches were similarly installed (I Tim. iv. 14). In the early church, the rite of imposition of hands was employed in the receiving of catechumens and the reconciliation of penitents. From its use in confirmation, that rite is commonly designated by the Fathers under the name of Imposition of Hands. In the ancient church, this rite existed in two forms: the actual laying on of hands, called *chirothesia*; and the extending the hand over or toward the person styled *chirotonia*. In the Rom. Cath. church the former is retained as an essential part of the sacraments of confirmation and holy orders; the latter is employed in the administration of the priestly absolution. Both forms are familiarly used in blessing. In the mass, also, previous to the consecration of the elements of bread and wine, the priest extends his hands over them, repeating at the same time the preparatory prayer of blessing. See Wetser's *Kirchen-Lexicon*, iv. 853. The rite of imposition of hands is used by Episcopalian, Presbyterian, and Congregational churches in the ordination of ministers. It forms part also of the ceremony of confirmation in the Anglican and Prot. Episc. and in the Lutheran Church. See Palmer's *Antiquities of the English Ritual*, Keeling's *Liturgie Britannice*.

HANDSEL, or HANSEL, n. *hǎn'sīl* [AS. *hand-syllan*, a striking of hands, a giving of the hand in token of conclusion: Icel. *handsa'*, an agreement upon which hands have been joined, a settled contract—from AS. *sy:lan*; Icel. *selia*, to give or bestow]: an earnest; money for the first thing sold; something given or done to make good a contract; in *Scot.*, a gift conferred at a particular season, as at or shortly after the New Year: V. to pay an earnest; to use anything for the first time; the first money received for goods. **HAND'SELLING**, imp. **HAND'SELLED**, pp. *-sīld*. **HANDSEL-MONDAY**, in *Scot.*, the first Monday of the year, on which servants and children receive presents.

HANDSOME, a. *hǎnd'sīm* [Ger. *handsam*, convenient; Dut. *handsaem*, dexterous, convenient]: having a well-proportioned and pleasing figure; beautiful or elegant; ample; large; generous. **HAND'SOMELY**, ad. *-lī*. **HAND'SOMENESS**, n. beauty; elegance; grace.—**SYN.** of 'hand-

HAND-TREE—HANG.

some': beautiful; lovely; fine; agreeable; pleasing; comely; nice; good-looking; becoming; appropriate; liberal; noble; ready; gainly; graceful.

HAND-TREE (*Cheirostemon platanoides*): large tree of nat. ord *Sterculiaceæ*, which receives its name from the peculiar appearance of its flowers. These have no corolla, but a large 5-lobed and angular colored calyx—bright red within—from which project the five stamens, united by their filaments into a column, and separating and curving at the summit, where they bear the anthers, so as to have some resemblance to a hand or claw. The tree is an object of interest from the fact also that it is superstitiously venerated by the Mexicans; a single tree near the Toluca, mentioned in the earliest histories, being asserted by them to be the only one in the world, and their eager gathering of its flowers always preventing its multiplication by seed. It was not till 1801 that cuttings were obtained from it for the Botanic Garden of Mexico, where the young plants have since produced seed abundantly. The tree has been found in Guatemala also. It is a lofty tree with a thick trunk, a habit similar to that of a plane, and broad maple-like leaves.

HANDWRITING, in Law: often an important element; proved by calling a witness who either saw the individual write the identical words, or who by correspondence, or by having previously at other times seen the same person write other papers, can swear that he believes the paper is the handwriting of the individual to whom it is attributed. Sometimes, where no direct evidence can be had, engravers and others accustomed to compare the niceties of handwriting are allowed to give their evidence, or rather state their belief as to the writing; but this kind of evidence is viewed with great suspicion, and is much discountenanced. In cases where a jury are to determine a disputed question of handwriting, they are since 1854 allowed in England to form their own opinion by comparing the disputed writing with other writings admitted to be by the same party, and this in both civil and criminal cases.

HANDY, a. *hǎn'dǐ* [Dan. *haendig*, handy: Goth. *handugs*, clever, wise: Norw. *hendt*, adapted]: ready; able to use the hands with ease and skill; dexterous; convenient; near. **HAN'DILY**, ad. *-dǐ-lǐ*, in a handy manner. **HAN'DINESS**, n. **HANDIWORK**, n. *hǎn'di-wérk*, work done by the hands; workmanship.—**SYN.** of 'handy': skilful; adroit; near.

HANDY-DANDY, n. *hǎn'dǐ-dǎn'dǐ* [a word expressive of shifting and changing (see **HAND** and **DANDLE**): in *children's play*, a changing of hands and places]: the changing of an article from hand to hand rapidly, and the guessing in which hand it ultimately rests.

HANG, v. *hǎng* [Icel. *hanga*; AS. *hon*, to hang]: to suspend; to be suspended; to fasten to something above in such a way as to be movable; to put to death by suspending by the neck; to be supported by something raised above the ground; to dangle; to depend; to cling to; to linger.

HANG-CHOW-FOO.

HANG'ING, imp.: **ADJ.** dangling; swinging: **N.** death by a halter (see **HANGING**, below). **HANG'INGS**, n. plu. drapery hung against the walls or at the windows of rooms for ornament; figured paper-linings for rooms. **HUNG**, pt. and pp. *häng*, did hang; also **HANGED**, pt. and pp. *hängd*. **HANG'ER**, n. that on which anything is hung; a short broadsword. **HANGER-ON**, a dependant. **HANG MAN**, n. the public executioner. **To HANG OUT**, to display. **To HANG OVER**, to hover or impend; to project. **To HANG UP**, to suspend; to suffer to remain undecided. **To HANG FIRE**, in *mil.*, to be slow in communicating fire through the vent to the charge, as in a gun; to be slow in taking effect. **To HANG TOGETHER**, to be closely united. **HANGED, DRAWN, AND QUARTERED**, the description of the capital sentence on a traitor, which consisted of drawing him on a hurdle to the place of execution, and after hanging him, dividing his body into quarters. This punishment was substituted by the stat. 54 Geo. III. c. 146, for the ancient still more barbarous sentence of disembowelling alive, but the crown has power to reduce the sentence to simple beheading: see **HANGING**. *Note.*—When reference is made to the punishment of death, *hang*, *hanging*, *hanged*, are the words employed, and not *hang* and *hung*.

HANG-CHOW-FOO, *häng-chow-fó'*: capital of the province of Che-keang, China, on the left bank of the Tsien-tang, where that river disembogues into the Bay of Hang-chow-foo. It is at the commencement of the Grand Canal, lat. 30° 18' n., long. 120° 15' e; about 150 m. s.e. of Nankin, and 110 m. s.w. of Shanghai, on the left bank of the Tsien-tang. Pop (1891) 800,000. H. is the most magnificent city of China—a Chinese proverb makes it a heaven upon earth. It was the capital of the empire during the rule of the Mongols, when it was visited by the celebrated Marco Polo early in the 14th c. There are ten gates through its lofty walls, which are 20 m. in circumference, but there are more inhabitants without the *enceinte* than within. The streets, wider than is usual in Chinese cities, are well paved, and in some directions lined for miles with elegant shops and extensive warehouses. The terminal ramifications of the Grand Canal are spanned by countless elegant bridges. H. is celebrated for its silk manufactures, and its embroidery excels that of any part of China. Mulberry-trees occupy every vacant spot within and without the walls. No city in China, unless it be Suchau, possesses wealth to compare with that of this remarkable place, which, moreover, is the most literary and most religious part of the empire. Colleges and temples, *literati* and priests abound and flourish in H. The imperial library in the palace of Kienlung, and the literary institutions, appear, however, to be going to decay, and could not at any period have had much educational influence. One cause of the celebrity of the city is found in the beauty of its environs. The tower of the Thundering Winds, though in ruins, is still an imposing edifice; while monumental gateways, light airy bridges, and temples of the size of villages, render the natural beauties of the city highly pic-

HANG-CHOW-FOO.

turesque. One of the temples possesses 500 images of the Io-han (Buddhist saints), of the size of life, richly covered with gold. Nothing can exceed the beauty of the valleys opening into the lake, richly adorned as they are with trees, chiefly the camphor and tallow trees, and the arbor vitæ. From a remote period, these scenes have been the resort of pilgrims, and every spot is hallowed by some legendary incident. At one place there is an image of Buddha, cut out of the solid rock, measuring 48 ft. from shoulder to shoulder. The nose is seven ft. long, and the other parts are of proportional size; it is gilt over like wooden and clay images of the same personage. The protruding rocks around are profusely carved with religious inscriptions and images of mythological characters. The n.e. section of H. is called the Tartar city, being exclusively devoted to the Mantchu garrison or military colony. It is separated from the Chinese city by a low wall. About 25 m. below the city is Kanpoo, once a mart of considerable importance, the port of H., when that city was the metropolis of China, described by Marco Polo as an extremely flourishing place; fluvial changes have rendered it inaccessible to any but small flat-bottomed vessels. Chapoo, about 50 m. distant, on the n. of the bay, is now the port of H. Chapoo has also a Tartar city; it communicates by branches of the Grand Canal with H. and Shanghai. It is the port to which Chinese trade with Japan is restricted. H. suffered considerably at the hands of the rebel Tae-pings (q.v.), by whom it was captured. There is a Rom. Cath. mission at H., and there are mission stations of the American Baptists and Presbyterians, and of the English Church Missionary Society.

The configuration of the Bay of Hang-chow-foo and the embouchure of the Tsien-tang river, which empties into it near the provincial capital, favors the formation of the tidal phenomenon designated an eagre or bore: see BORE. Dr. Macgowan, the first European who has witnessed this magnificent spectacle, has published an account of it in the *Proceedings of the Asiatic Soc. of Hong-kong*. As the tide rushes into the mouth of the river, it becomes elevated to a lofty wave, which attains its greatest magnitude opposite the city of Hang-chow-foo. Generally, there is nothing remarkable in its aspect, except at the period of the vernal and autumnal equinoxes, the maximum being at the latter season. As the hour of flood-tide approaches, crowds gather in the streets running at right angles with the river, but at safe distances; boatmen stop lading and unlading their vessels, and put out into the middle of the stream. The centre of the river teems with craft. Loud shouting from the fleet announces the appearance of the flood, which seems like a glistening white cable stretched athwart the bay as far down as the eye can reach. Its noise, compared by native poets to that of thunder, speedily drowns that of the boatmen; and as it advances with prodigious velocity, it assumes the appearance of an alabaster wall, or rather of an advancing cataract four or five m. across, and about 30 ft. high. As the foaming wall

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of water dashes impetuously onward, one trembles for the safety of the floating multitude. They cease shouting, and devote their energies to the steadying of the prows of their vessels toward the advancing wave, which threatens to submerge everything afloat; but they all vault as it were to the summit with perfect safety. This grand and exciting scene is but of a moment's duration; the wave passes up the river in an instant, but from this point with gradually decreasing force, volume, and velocity, disappearing entirely a few miles above the city. From ebb to flood tide, the change is almost instantaneous; a slight flood continues after the passage of the wave, but it soon begins to ebb. Within the historic period, numerous changes have been effected by the action of this wave, the most noted being the removal of the rocky islet from the centre of the river opposite H. Chinese ingenuity has been long exerted, with imperfect success, in preserving the alluvial plain from the wasting action of the eagre. The history of the dikes that have been successively erected, of failures and disasters, found in local annals, show that, like the Yellow river, this part of the Tsien-tang has been a constant source of anxiety and expense to the government, costing about \$130,000 yearly.

HANG'ING: mode of capital punishment. In England, formerly, in atrocious cases it was usual for the court to direct a murderer to be hung upon a gibbet in chains near the place where the crime was committed: later the custom was to order the body to be dissected—and the execution to take place on the next day but one after the sentence was passed. But these useless severities were abolished by the stat. 6 and 7 Will. IV. c. 30.

The mode of punishing by H. was adopted in England 1241, when Maurice, a nobleman's son, was hanged for piracy. Other more barbarous modes of inflicting death were long in use, being prescribed by statute, but have been abolished, and H. has long been the ordinary, because deemed the most humane, mode of capital punishment. In treason, H. is part of the statutory punishment, coupled with mangling the body, though the crown may change the sentence into simple beheading, except in the case of women, who are only hanged, in deference to their sex.

In the United States beheading is not a mode of punishment: hanging has been and is the only mode of execution under civil law, except that in N. Y. a law went into effect 1889, Jan. 1, requiring all executions of capital sentences to be by electricity. See **EXECUTION**.

The cause of death in hanging is complex. The compression of the windpipe by the cord, the obstruction of the return of venous blood from the head, and of the flow of arterial blood to the brain, the stretching or tearing of the nervous structures of the neck, and in some instances dislocation or fracture of the vertebræ, may concur in the production of the fatal effect, which, though attended with violent struggles in some cases, probably supervenes very speedily. For the subject, in its relations to medical jurisprudence, see **STRANGULATION**.

HANGING GARDENS—HANKOW.

HANGING GARDENS of Babylon: anciently reckoned among the wonders of the world. Their construction is variously ascribed to Queen Semiramis, and to Nebuchadnezzar—seven centuries later, but still more than five centuries B.C. Nebuchadnezzar is said to have made them for the gratification of his Median queen, Amytis, because the Babylonian plain seemed dreary to her in comparison with the varied and romantic scenery of her native land. Diodorus and Strabo have given particular descriptions of them; and though it is remarkable that they are not mentioned by Herodotus, while Quintus speaks of them as ‘fabulous wonders of the Greeks’—an opinion which some of the learned in modern times have adopted, denying their very existence—yet the probability seems in favor of the general accuracy of the descriptions, and even that the ruins of this celebrated structure are to be recognized among the mounds which mark the site of Babylon: see **BABYLON**. The H. G. are said to have formed a square, with an area of nearly four acres; but rising in terraces curiously constructed with stone pillars, across which were placed stones, covered with reeds and bitumen, and again with bricks united by cement; above these, sheets of lead, to prevent moisture from flowing down, and finally a sufficient layer of earth; the summit being elevated 300 ft. above the base, so that at a distance the whole presented the appearance of a pyramidal wooded hill. There was a large reservoir at the summit filled with water by pumping from the Euphrates, for the irrigation of the gardens, and the supply of their numerous fountains. Fountains and banqueting rooms were distributed throughout the numerous terraces; groves and avenues of trees, as well as parterres of flowers, diversified the scene; while the view of the city and neighborhood was extensive and magnificent.

HANK, *n.* *hǎngk* [Ger. *hanken*, to fasten something upon another: Norw. *haank*, a cluster: Icel. *hangr*, a hank or coil; *haunk*, a wreath of thread wound round a reel]: *literally*, a loose ring or coil for hanging things up by; a parcel or thread consisting of two or more skeins tied together; a coil of thread; in *ships*, a wooden ring fixed to a stay; in *N. of Eng.*, a withy or rope for fastening a gate.

HANKER (AFTER), *v.* *hǎng'kèr* [Dut. *hungkeren*, to seek eagerly: Flem. *hungkeren*, to hinner]: to long for with eagerness. **HANKERING**, *imp.*: **ADJ.** longing for with ardent desire: *N.* an ardent or vehement desire to possess or enjoy. **HANKERED**, *pp.* *-kèrd*.

HANKOW, *hán-kow'* (Mouth of the Han): port of China, at the junction of the Han river with the Yang-tze-kiang, 600 m. from its mouth; lat. abt. 30° 30' n., and long. 114° east. It consists of three cities, the principal being Wu-chang-foo, on one side of the Han river, and Han-yang-foo on the opposite side. Strictly speaking, H. is a suburb of the former. It was destroyed during the Tae-ping rebellion, but has since been rebuilt. English and American steamers ply regularly and frequently between H. and Shanghai. Vessels of large size can reach the city; the

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river is navigable 360 m. higher up, to the city of Ichang. Powerful flat-bottomed steamers are requisite for navigating this part of the Yang-tze-kiang, the current running at from seven to eight knots per hour. The principal export is tea. Other native products exported are silk, oil, tallow, tobacco, and wax. The chief imports are cotton piece-goods, woolens, metals, Straits and Japanese produce. The value of the exports in 1870 was \$22,170,645 of the imports, \$29,691,570. In 1901 the exports and imports were respectively valued at \$2,309,462 and \$1,427,660. From 1870 to 80 the value of the trade of the port was much larger. Pop. (1901) 850,000.

HANLAN, *hǎn'lan*, EDWARD: oarsman: b. Toronto, Canada, 1855, July 12. He won his first amateur race 1872, and professional 1873; gained the championship of Toronto Bay 1873, Burlington Bay 1874, the British provinces 1877, and the world at London 1880; subsequently defeated Boyd, Trickett, Courtney, Ten Eyck, Hosmer, McKay, Hawdon, Elliott, Ross, Plaisted, and was defeated by Beach (1884, 5), Teemer (1887), and Kemp (1888).

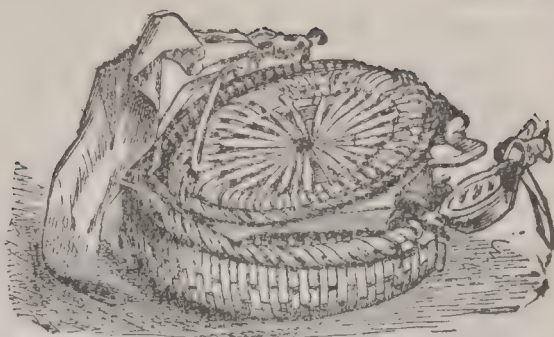
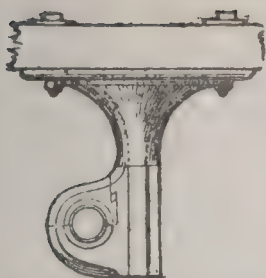
HANLEY, *hǎn'li*: town of Staffordshire, England, in the district known as *The Potteries*, and included in the parliamentary borough of Stoke-upon-Trent (q.v.). It is two miles and a half from Newcastle-under-Lyme, about one mile from Stoke, and one mile from the North Staffordshire railway station and canal offices. The principal portion of the town has an elevated site. The streets are not very regular, but they are wide and well paved; and many of the houses are well built. There are several commodious market-places. There are numerous places of worship of the Church of England and other denominations. Among the public institutions is an infirmary. Contiguous to H. is SHELTON, which may be regarded as forming with it one town. The manufacture of earthenware and china is the principal employment of the inhabitants of both. At Shelton is a villa called Etruria, erected by Josiah Wedgwood, remarkable for the Etruscan vases with which it is ornamented, imitations of ancient vases found in Italy, and the study of which was of great use to him in his endeavors to improve the manufacture of earthenware. Pop. of H. (1881) 48,354; (1891) 54,846; (1901) 61,519.

HANNA, MARCUS ALONZA: an American legislator; b. 1837; engaged in the wholesale grocery business and afterward in the iron and coal trades; was long identified with the lake carrying industry, being interested in vessels plying on the lakes and also in the construction of such vessels; was president of the Union National bank of Cleveland, and of the Cleveland City Railway company; director of the Union Pacific Railway company; delegate to the National Republican conventions of 1884, 1888, and 1896; became chairman of the National Republican committee in 1896; and was elected U. S. Senator from Ohio, 1897. In the senate he was a member of the Committees on Naval Affairs, Mines and Mining, Interoceanic Canals, Enrolled Bills, Commerce, and chairman of Committee on Relations with Canada.

HANNIBAL.

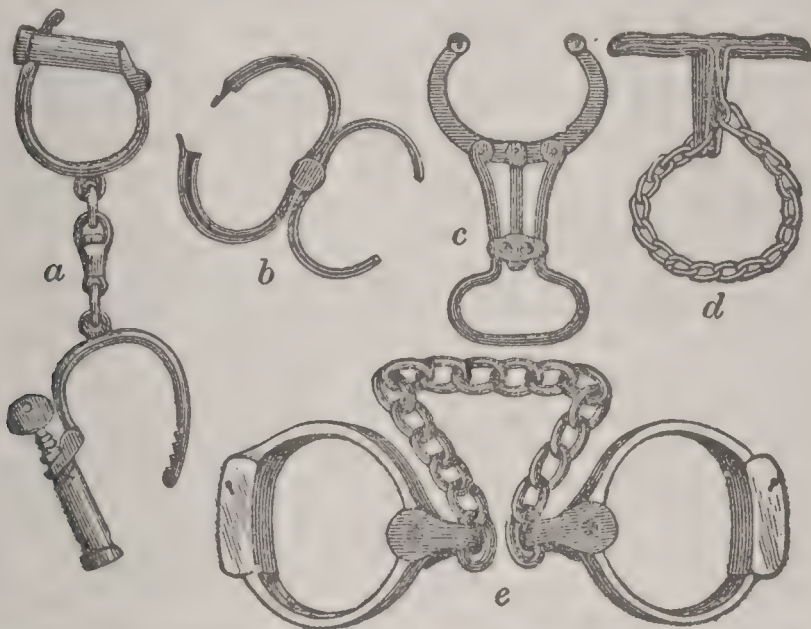
HANNIBAL, *hăn'î-bal*: city in Marion co., Mo.; on the Miss. river; e. terminus of the H. and St. Joseph and n.e. terminus of the Mo. Kan. and Tex. railroads; on the St. Louis, Keokuk and Northwestern, and the Wabash railroads; 18 m. s. of Quincy, 102 m. w. of Springfield, 148 m. n. of St. Louis, 206 m. e. of St. Joseph. It is the seat of H. College (Meth. Episc. South), contains St. Joseph's Acad., high, grammar, and primary schools, 14 churches, 2 state banks (cap. \$117,500), iron foundry, railroad machine-shops, and car-works, grain elevators, flour-mills, tobacco-factories, and lime-kilns, and has a lumber trade with Mo., Kan., and Tex., aggregating 150,000,000 ft. per annum. H. is handsomely laid out, and the Miss. river is here spanned by an iron railroad bridge nearly 1,600 ft. long between abutments, built 1872. Pop. (1870) 10,125; (1890) 12,857; (1900) 12,780.

HANNIBAL, *hăn'î-bal* (*the favor of Baal*): hero of the second Punic war; b. B.C. 247; said by Livy to have died B.C. 183; famous son of Hamilcar Barca. He was the greatest of all that bore the name of H., common among the Carthaginians, and numbering 14 or 15 famed in history. When he was nine years old, he accompanied his father on his Spanish expedition; and before starting, swore that oath of eternal hatred to the Roman name, which he kept faithfully throughout his life. After the death of Hamilcar, he was employed by Hasdrubal, his brother-in-law, in most of the military operations which he undertook. Such was the esteem in which he was held by the soldiers, and such a reputation for bravery and strategic skill had he gained, that when Hasdrubal was assassinated, the army with one voice elected him commander-in-chief, an appointment which the authorities at Carthage at once ratified. H., at this time in his 29th year, undertook the command with ready zeal, for he longed to realize the legacy left him by his father, and to strike a death-blow at his country's rival by attacking her on her own soil. But before he entered on a task of such magnitude, he deemed it prudent to complete the subjugation of Spain, and accordingly spent two years in contests with some tribes hitherto independent of Carthage. Saguntum, a city in alliance with Rome, was attacked by him on the ground that its inhabitants were making aggressions on the Torboletes, subjects of Carthage. After a siege of eight months the city was taken; and the Romans, after an embassy had unsuccessfully demanded the surrender of the general who had thus wantonly violated the treaty, declared war B.C. 218. Having taken measures for the defense of Africa and Spain, during his absence, he started from New Carthage B.C. 218 with 90,000 foot, 12,000 horse, and 37 elephants. This force was very much thinned by his contests with the tribes between the Iberus and the Pyrenees, by the necessity of leaving Hanno with 11,000 men to keep them in subjection by desertion in the passage of the Pyrenees, and by his sending home a portion of his Spanish troops. His object in this last act was to inspire the soldiers with thorough confidence in themselves and their general. From the Pyrenees he

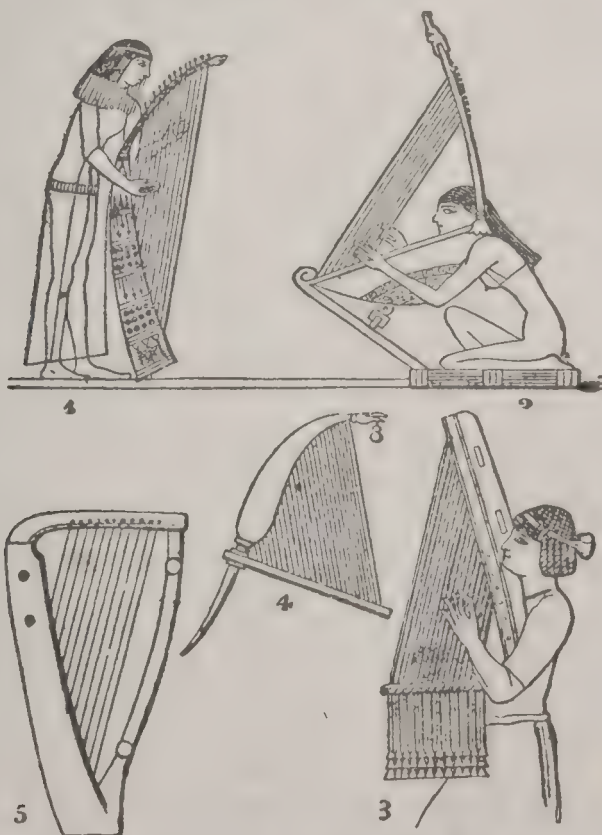


Hanger or Hanging Bracket.

Hanape used for Keeping the Records.



Various forms of Handcuffs: *a*, Adjustable; *b*, Snaps; *c*, Nippers; *d*, Twisters; *e*, Leg-irons.



Ancient Harps: 1, 2, Egyptian; 3, Assyrian; 4, Persian; 5, Anglo-Saxon.

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marched to the Rhone, without opposition, since Scipio was at Massilia (Marseille), four days' march from the point where H. crossed the river in the face of the Celtic hordes who sided with the Romans. His next great difficulty was the passage of the Alps, which he effected in 15 days, in spite of the attacks of the mountain tribes, the snows, storms, and other difficulties. Much discussion has taken place among learned men whether H. crossed the Cottian Alps by the pass of Mont Genevre (or Cenis), or the Graian Alps by the pass of Little St. Bernard. For the former route, Michelet, Thierry, and most French writers argue; and for the latter, with better reasons, Niebuhr, Arnold, Mommsen, etc. After allowing his army (now about 26,000 strong) some time to recruit in the rich villages of the friendly Insubrians, he first subdued the Taurini, a tribe hostile to the Insubrians, and took their chief city after a siege of three days; and thus forced into alliance with him all the Ligurian and Celtic tribes on the upper course of the Po. Scipio, having returned from Massilia, took the command of the army in n. Italy, and met H. first on the plain near the river Ticinus. The Romans were entirely routed; and Scipio, severely wounded, retreated across the Po. The armies again met at the Trebia, with a like result, though the Romans, who had received reinforcements, were much more numerous. These battles were in B.C. 218. Having wintered in the neighborhood of the Po, and levied additional troops among the Gauls, most of whom were now his friends, H. started southward as soon as spring permitted, marching through Liguria and the swamps of the Arno. In this difficult route, immense numbers of his beasts of burden and horses perished, and he himself lost the sight of one eye. He next inflicted a severe defeat, near Lake Thrasy-mene, on the consul Flaminius: thousands of Romans, including the consul, perished by the sword, and thousands in the lake, while 15,000 were taken captive, H. losing only 1,500. After this victory, he crossed the Apennines to Picenum and Apulia, and thence re-crossed to the fertile Campania, which he ravaged. Thither Fabius was sent with an army to oppose him, but no general engagement took place, the consul endeavoring to lead H. into snares, which he succeeded in doing; but the wily African extricated his army by a stratagem, and returned to Apulia. He wintered at Cannæ, and B.C. 216, June 2, or, according to others, Aug. 2, he almost annihilated a Roman army of 90,000 men under Terentius Varro and Æmilius Paulus, in a battle a little below the town. About 50,000 are said to have fallen, including Æmilius Paulus, and a host of Roman knights, senators, and other distinguished persons. Here H. committed, perhaps, the great military error of his life, in not marching direct to Rome; but it is supposed that he refrained to allow the tribes of Italy to declare in his favor. Many in s. Italy did attach themselves to his interests, but not in such numbers as he had anticipated. After some delay, he marched on Neapolis (Naples), which he did not succeed in taking, but the gates of Capua were

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opened to him, and here he wintered. The enervating effect which the luxury of Capua is said to have had on his army has been greatly overdrawn, but his residence there forms, in one point of view, the turning-point in the war, which from this time became more desultory. H.'s great purpose was to arm the Italian nations against Rome, and so to crush her power by means of her own subjects; the Romans, on the contrary, under the command of Fabius Maximus (see *FABIUS CUNCTATOR*), henceforth avoided coming to a pitched battle with the Carthaginians, but sought rather to keep the tribes in awe, and harass H. and his lieutenants by small armies in different parts of the country. H. traversed Italy in all directions, surprised the Roman generals, defeated their armies, captured their towns, such as Casilinum, Arpi, Tarentum, Metapontum, Thurii, Locri, and many others; at one time he even encamped only three miles from Rome. He defeated Centenius near Capua; Cneius Fulvius at Herdonea; Fulvius Flaccus on the Anio; Crispinus and Marcellus in Lucania; and the besieging army before Locri: in all these cases the armies were almost annihilated. The defeat of Hasdrubal, his brother, with the loss of his army, at the river Metaurus, practically decided the second Punic war, and was one of the decisive battles of the world: it compelled H. to confine himself to the mountainous peninsula of Brutium, where for four years on the defensive, he resisted all the efforts of the Romans to dislodge him. At length, after having maintained himself in Italy more than 15 years, he was recalled to Africa, to defend his country against Scipio, who had 'carried the war into Africa;' but notwithstanding his utmost exertions, and the bravery of his veteran troops, he was defeated by Scipio, near Zama, with a loss of 20,000 men. Peace was concluded in the following year, B.C. 201.

H.'s darling scheme had in the meantime been baffled, but his hatred to Rome was not diminished; accordingly he set himself with all his zeal to make preparations for a still more deadly struggle at some future day. He turned his attention, in the first place, to political reforms, and some constitutional changes loudly called for, by which he placed the finances on a better footing. But his enemies accused him to the Romans of stirring up Antiochus III. of Syria to make war on them; and when ambassadors came to Carthage, H. fled to the court of Antiochus at Ephesus. In the war which followed, he took no conspicuous part, but the king bitterly regretted afterward that he did not take the advice of H. to carry the war into Italy. When peace was concluded, the surrender of H. was one of the conditions; but foreseeing such a result he fled to Prusias, King of Bithynia, for whom he gained a naval victory over Eumenes, King of Pergamus. He was at length demanded by the Romans; and seeing no hope of escape, he committed suicide by poison, which it is said he always carried with him in a ring for such an emergency.

Among ancient authorities, consult Polybius, Dion Cassius, Plutarch, and Appian; and of the moderns,

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Arnold, Niebuhr, Mommsen, Ihne, and the other historians of Rome. For military operations of this transcendent military genius, see Vaudoucourt *Histoire des Campagnes d'Annibal en Italie*.

HANNO, *hán'nō*: probably a king of the Carthaginians: (perhaps father or son of that Hamilcar who fell at Himera B.C. 480): famed for his voyage of discovery along the w. coast of Africa, to found Libyo-Phœnician towns. His expedition is said to have consisted of 60 ships and 30,000 men and women. One city was built not far from the Strait of Gibraltar, and others along the coast reaching to Cape Bojador. He went s. as far probably as Sierra Leone. On his return to Carthage, he inscribed an account of his voyage on a tablet, and placed it in the temple of Kronos (Saturn), or, according to others, of Juno. It seems to have been written in the Punic language; the version of it which remains is only a Greek translation. The *Periplus*, the only detailed account extant of the voyage, has been published on the continent by Gelenius, Boecler and Müller, and Berkel, and with an English translation by Falconer (Lond. 1797). Great discussions have taken place among the learned as to the *time* when H.'s voyage was made (the best authorities favoring the period about B.C. 570; also as to *the* Hanno out of all the many Hannos of history; and as to the facts stated in the *Periplus*. Some recent writers find evidence in it of the existence of the *gorilla* in those ancient days. For a full discussion of the subject, see Dodwell's Dissertation; Bougainville's Essay; also Falconer's edition.

HAN'NO (called the GREAT): one of many of that name, who was a Carthaginian leader, and the chief opponent at Carthage of Hamilcar and Hannibal. He was leader of the aristocratic party; and especially in the second Punic war favored peace with Rome.

HANOI: capital of Tonquin: see CACHAO.

HANOVER, *hán'ō-ver*: town in N. H., pleasantly situated on the e. bank of the Connecticut river, 52 m. n.w. from Concord; seat of Dartmouth College (q.v.). Pop. (1890) 1,817; (1900) 1,884.

HANOVER.

HANOVER (Ger. *Hannover*, *hân-nō'vër*): formerly an independent kingdom of n. Germany, but since 1866 a province of Prussia. (On some points in this article relative to the period before the incorporation with Prussia, see for the recent period, **PRUSSIA, KINGDOM OF: GERMANY.**) Hanover extends from 51° 18' to 53° 52' n. lat., and from 6° 43' to 11° 35' e. long. It may be divided into three districts, viz.—1. The eastern, which consists of the duchy of Bremen cum Hadeln, a section of the duchy of Lauenburg, the duchy of Werden, the principalities of Lüneburg, Kalenberg, and Hildesheim, and the countships of Hoya and Diepholz; 2. The western (separated from the former by the duchy of Aldenburg) comprising the duchy of Aremberg-Meppen, the principalities of Osnabrück and East Friesland with the Harlingerlands, the lower countships of Lingen and Bentheim, and the circle of Emsbüren, which formerly belonged to the see of Münster; 3. The southern, separated from the other Hanoverian territories by Brunswick, and comprising the principalities of Grubenhagen and Göttingen, with the districts of Elbingerode and Ilfeld. H. is bounded n. by the German Ocean and the river Elbe, e. by Mecklenburg and Prussian Saxony, s. chiefly by Westphalia and Hesse Cassel, w. by Holland. The following table shows the divisions, or landrosteien, of H., with their respective areas and population, 1890:

Landrosteien, or Provinces.	S Area in Sq. Miles.	Population, 1890.	Chief Towns.	Population, 1890.
Hanover.....	2,300·13	526,212	{ Hanover with sub's.. }	165,499
Hildesheim....	1,708·56	476,263	Hildesheim ..	33,481
Lüneburg	4,293·45	420,093	Lüneb'rg ('85)	19,034
Stade.....	2,595·60	338,195	Stade ('85)....	9,700
Osnabrück	2,388·33	299,478	Osnabrück ...	39,929
Aurich	1,144·08	218,120	Aurich ('85)..	5,390

Area, 1858, a little more than 14,670 sq. m.; pop. 1,844,976. Area of the Prussian province of H., 14,800 sq. m.; pop. (1900) 2,590,939: Rom. Cath. 338,906; Jews 15,393; balance Prot.

Physical Character, etc.—The general physical character of H. is that of an extended plain with slight undulations, but in the s. the country is mountainous, embracing a considerable part of the Harz, together with the lesser heights of the Eichsfeld, Sollinger, Süntel, Deister-Oster, and Hildesheimer-Wald. From the base of these hills to the sea-coast, the land is one vast plain, interrupted only at some points by low ranges of hilly ground. The mountains, which abound in minerals, are covered with dense woods, and the valleys between are fertile and well adapted to agriculture; but beyond these valleys the country is traversed e. to w. by a sandy tract 50 to 80 m. in width, known as the Lüneburg Heath in which the inhabitants with difficulty gain scanty subsistence by rearing sheep and keeping bees. Great marshes or peat-moors cover the n.

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and n.w. districts, but these have in some parts been so successfully drained that they yield good pasture, though the soil generally is unproductive, comprising some of the poorest districts of Germany. The coasts are low, and the land, in many parts below sea-level, requires to be protected from overflow by embankments and dikes. Along the banks of the rivers are fertile districts, even in the north.—The principal rivers are, the Elbe, which forms 120 m. of the n.e. boundary; the Weser, on whose affluent the Leine, Hanover, the cap. of H. is situated; the Aller, the Ems, and the Vechte, all falling into the German Ocean. There are numerous small lakes. The principal canals are between Lingen and Meppen, Aurich and Emden, and the Bremen Canal between the Hamme and the Swinge, which serves to drain the moors, and to transport the turf and peat which they yield.

Climate.—The climate near the ocean, is moist and fogs and heavy winds are frequent; in the s. it is dry and colder; and in some parts of the country marsh fevers prevail, though in general H. may be characterized as healthful. The mean annual temperature is $46^{\circ}\cdot5$; winter $28^{\circ}\cdot7$, summer $64^{\circ}\cdot5$. Extremes are rare. The average annual fall of rain is 23 inches.

Soil, Products.—The soil is generally of inferior quality, though it varies considerably in different districts. Agriculture is in a very backward condition, and notwithstanding improvements of late years, large tracts of land, well adapted for cultivation, lie waste in every part of the country. The great subdivision of the land, and the consequent absence of capital, are the main causes of this imperfect mode of agriculture. The following proportions are given by Marcard for the distribution of the land in Hanover. Arable, meadow, and garden land, 5,833,000 morgen (the morgen is $0\cdot6310$ acre); forests, 2,242,000; waste lands, 6,514,000. The richest corn-growing districts are Hildesheim, Göttingen, and Kalenberg, and the marsh-lands near the Elbe and the Weser; rye is grown for bread, and largely used by the rural population. The turf from the peat-moors in the n. and n.w. districts is the only fuel in some parts of the country. Cattle, horses, and geese are extensively reared in e. Friesland and the marsh-lands; and barley and oats are raised in sufficient quantity for exportation. The Lüneburg and other extensive heaths afford good sheep-walks; and when the heather is in blossom, are resorted to by the keepers of bees, who tend their hives with much care and success. In 1870–80 there were about 220,000 hives, chiefly in the Lüneburg district, yielding honey to the value of abt. \$200,000 a year. In the same period, it was estimated that there were in H. about 200,000 horses (more than 4,000 stallions); 900,000 horned cattle; 2,000,000 sheep (of which 244,000 were merinos), 520,000 swine, and 170,000 goats. In e. Friesland, large flocks of geese are reared, the flesh of which is salted and exported; and large quantities of butter and cheese are annually exported from the same localities.

The rivers and lakes of H. yield abundance of fish, and

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there are more than 2,500 well-stocked fishponds in the province. Salmon is obtained in large quantities in the Weser. The herring-fishery, principally from Emden, is prosecuted with considerable enterprise, the boats going frequently as far as the coasts of Scotland. The forests on the Harz Mountains and their offshoots yield much wood, chiefly pine and oak, while the valleys grow tobacco and some good fruits. The mineral resources of H. are rich and varied, including iron, copper, silver, lead, sulphur, zinc, coal, cobalt, vitriol, alum, arsenic, lime, gypsum, marble, pipe-clay, kaolin, freestone, slate for tiles, salt, obtained from 18 works, etc. In 1875 the annual production of some chief minerals was estimated as follows: iron, 2,682,100 cnt. (1 centner = 110 lbs.); lead, 169,000 cnt.; salt, 1,092,000 cnt.; coal, 2,300,000 cnt. About one-third of the iron and one-fourth of the salt are from the mines of the state, and it is estimated that 35,000 persons are employed in the different mining operations.

Commerce, etc.—The trade, which has had some augmentation since H. joined the German Zollverein (q.v.) 1854, is still unimportant and undeveloped notwithstanding the numerous favorable conditions presented by the navigable rivers of the Hanoverian States, their good ports, well-kept high-roads, and extended railways. Besides mining, agriculture, and the rearing of cattle and other animals, the chief branches of industry are sugar-refineries, and the manufacture of tobacco, paper, hemp, thread, and linen, leather, bricks, pipes, etc.

The exports consist mainly of mineral products, coarse linens and canvas, honey and wax, feathers, wood, wool, horses, cattle, wheat and rye, butter, hops, rape and linseed, oil-cakes, hams, and sausages. The imports comprise English manufactured goods, colonial products, wine and spirits, and silk. Emden is the principal trading port, but the chief sea-trade of the country is effected through Hamburg and Bremen, while H. has an extensive commission and transit business with Leipsic and Frankfurt-on-the-Maine. Besides, Emden, Pappenberg, Harburg, Lehe, and Leer, are rising into note as trading ports. H. has good high-roads, and its postal system is well organized. The length of its post and high-roads is estimated at more than 3,800 m., and that the lines of railway in operation (1875) 660 m. The telegraph lines are about 700 m. in extent.

Revenue.—The revenue amounted, according to the budget for 1861–2, to 19,588,322 thalers (the thaler = 2s. 10 $\frac{3}{4}$ d.); expenditure 19,763,941 thalers. The national debt had risen, 1861, to 46,344,836 thalers, including a debt for railways of 30,623,075 thalers.

Army.—The army numbered nearly 27,000 men. The service was for a period of seven years, the last year's service, however, being limited to the reserved corps. The principal fortresses are those of Stade, Harburg, and Fort-William, in the harbor of Bremen. H. furnished 15,230 men to the former German Confederation, and had four votes in the Plenum, or Full Council of the diet.

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Religion, Education, etc.—Of the pop. (1900) 2,590,939, there were—Protestants 2,227,816, Rom. Cath. 338,906, different Christian sects 8,443, Jews, 15,393. Religious matters are under the direction of Lutheran (Evangelical) and Reformed consistories at Hanover, Stade, Otterndorf, Aurich, Hadeln; and under the see of Osnabrück, held alternately by a Rom. Cath. and a secular Prot. bishop; and the Rom. Cath. see of Hildesheim.—H., like other countries of n. Germany, is amply provided with educational institutions. It has one university at Göttingen, 17 high and 13 lower gymnasia, 5 normal and 21 polytechnic schools, a military academy at Hanover, a 'Foundation Padægogium' at Hefeld, schools of surgery and midwifery, of which that at Celle is the most esteemed, schools for the blind, deaf and dumb; also about 3,600 free parish schools, in most cases dependent on the local church party, whether Prot. or Rom. Catholic. There are also several good mining and forest schools in different parts of the kingdom.

The poor are provided for partly by voluntary subscription and partly by the proceeds of their own labor in the poor-houses erected for the reception of persons in want. There are partially self-supporting reformatories at Emden and Celle, while Hanover, Hameln, Göttingen, Lüneburg, Emden, and Hildesheim have each its house of detention and poor-house.

Law.—The administration of the law was presided over by a special ministry. Criminal cases have, since 1843, been tried before sworn juries.

Constitution, Government.—H. was a sovereign kingdom 1814–66. The monarchy was hereditary in the male line, and the administration was conducted by a responsible ministry with two representative chambers, whose concurrence was essential to the exercise of certain prerogatives of the crown. There were, moreover, 7 provincial assemblies, whose concurrence and assent were necessary for the promulgation of laws and the levying of taxes within their several districts. The highest department of the govt. was the council of state. The cabinet which, after 1848, was composed of responsible members, comprised seven ministers, each presiding over a special dept. of the administration. The chambers were summoned every two years, but the diet or landtag was septennial. The monetary system, and the weights and measures of H., were the same as those adopted by the German Zollverein (q.v.).

People.—The Hanoverians are a mixed race: those inhabiting the n.e. and central provinces are mostly Saxons, but those on the coast are of Frisic origin; those w. of the Ems, Dutch, those in the s. provinces, Thuringians and Franconians. Platt-Deutsch, or Low German, is commonly spoken in all the rural districts except those bordering on the Netherlands, in which Dutch is the ordinary speech; while High German, as in every other part of Germany, is the language of the educated and higher classes.

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History.—The country included in H. was occupied in remote ages by Saxon tribes, which after a long-continued struggle under their leader Witikind, submitted to the dominion of Charlemagne, and accepted Christianity. H. continued to form part of the Frankish empire until the time of Emperor Ludvig the German, when Ludolf of Meissen incorporated it in the duchy of Saxony. In 951, the Emperor Otho I., who had inherited Saxony from his father Henry I., hereditary duke, bestowed it on Hermann Billung, on the extinction of whose family, 1106, it passed to Lothaire of Supplinburg. By the marriage of Lothaire with Richenza of Nordheim, new territories were added to the duchy, which passed to the family of the Guelphs through their descendant Gertrude, who married Henry the Proud of Bavaria. Henry the Lion, son of the latter, did much to advance civilization and commerce by conferring rights and privileges on various towns which had advocated his cause; but when he fell under the ban of the empire, a period of anarchy succeeded, which at first threatened the ruin of the country. When Henry lost the duchy of Saxony, he retained his hereditary lands of Brunswick and Lüneburg through the special favor of the emperor.

The Reformation early found adherents among the burgher and rural populations of H.; but as the new doctrines were strongly opposed by many of the chief magistrates and the majority of the nobles, their formal introduction was the subject of violent altercations between the opposite parties, until the conversion of Ernest I. of Lüneburg, 1535, gave support and stability to the Protestant cause.

The line of Brunswick-Lüneburg began with William the younger, who—in the partition which he and his elder brother Henry (founder of the last reigning Brunswick house) made of the dominions of their father, Ernest I.—obtained 1569 the duchies of Lüneburg and Celle (Zeil). William died, 1592, leaving seven sons, who, with a view of avoiding further dismembering of their patrimony, agreed that the eldest should succeed, but that one only of their number should marry. The lot of marriage fell upon the sixth brother, George, who died 1641, in the reign of his fourth brother, Duke Frederick, last survivor of the family. On the death of Frederick, 1648, Christian Lewis, eldest son of Duke George, succeeded his uncle, and in accordance with a family compact, took as his portion of the inheritance, Lüneburg, Grubenhagen, Diepholz, and Hoya, with Celle for his residence; while his next brother, George William, obtained Kalenberg and Göttingen, with Hanover for his residence, and thus gave origin to the lines of Celle and Hanover, which were again merged in one after the death of Duke George William (third son of Duke George), who, dying without male heirs, was succeeded by his kinsman and son-in-law, the elector, George Louis of Hanover, who ascended the throne of England as George I. (q.v.) on the death of Queen Anne, 1714, as the nearest Prot. heir of the deceased sovereign—being son of the electress, Sophia, daughter of Elizabeth,

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queen of Bohemia, and granddaughter of James I. of England. Duke George William of Celle deserves notice for his warlike and active administration, and for the part which he took in all the momentous affairs of his age: thus he sent auxiliaries to Venice, to aid the republic against the Turks, co-operated with the Duke of Brunswick to reduce his insurgent capital; entered into an alliance with the emperor against France and Sweden; sent an army into Hungary to resist the Turks; and, 1688, lent troops and money to William of Orange against James II. of England.

With George Louis, King of England, second elector of H. or Brunswick-Lüneburg, a brighter epoch opened to the Hanoverians, who, on his accession to the throne of England, were relieved from the burden of maintaining the court and ducal household, while the revenues of the crown were thenceforth appropriated solely to the general purposes of the state. Bremen and Werden were obtained in this reign by purchase from Denmark. George II., who succeeded 1727, showed the same care as his father to spare the revenues of H. at the expense of those of England. In his character of elector, he participated in the Austrian War of Succession, 1740-48; but in the Seven Years' War, when H. suffered materially from the incursions of the French, he sided with Prussia. This king founded the Univ. of Göttingen 1745. The first 30 years of the reign of George III. (q.v.), who succeeded to the English throne on the death of his grandfather 1760, contributed largely to the prosperity of H., which, like the other states of n. Germany, profited by the increased English and American trade, for which the Hanoverian ports and rivers formed the regular channels of communication with the rest of Germany. In 1793, Hanoverian troops took part in the wars against the French republic, but the expenses of their maintenance were defrayed by England; and it was not till 1801, when Prussia, refusing to acknowledge the neutrality of H., threw troops into the electorate, that H. suffered from the consequences of the anomalous position in which its relations to England placed it in regard to the other states of Germany. The Prussian troops evacuated H., at the close of the same year, in accordance with the treaty entered into between France and England; but the claims and counterclaims which arose from this occupation, gave rise to protracted discussions, not finally settled till 1830, when it was stipulated by treaty that H. was to pay to Prussia an indemnity of 375,000 thalers. In 1803, when war was renewed between England and France, Napoleon threw an army, under the command of Mortier, into H., and the result was to compel the Hanoverian govt. to enter into a convention with the French general, by which it bound itself to abstain from serving against France during the pending war; to give up fortresses, arms, and horses to the enemy; to subsidize French troops; and to participate unconditionally in the general costs of the war. A large number of the army, however, having contrived to evade signing these articles of surren-

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der, went over to England, where the men were incorporated into the German Legion, which did good service both in the Peninsular war, and in the Belgian campaign of 1815, which terminated in the battle of Waterloo. In 1806, Napoleon, after having ceded H. to Prussia, and again withdrawn it, appropriated a portion of the electorate to complete the newly-formed kingdom of Westphalia, which 1810 received the whole of the Hanoverian territory. Finally, H. was united with France, and the n.w. portion divided into the depts. of Bouches de l'Elbe, Bouches des Weser, and Leine, while the s.e. portions formed the Westphalian depts. of Atter and Harz. After the expulsion of the French, H. was elevated to the rank of a kingdom 1814. In the same year, the prince regent of England convoked the Hanoverian states to deliberate upon the best manner of consolidating the various independent governments of the different provinces into one systematic whole. In 1816, the Duke of Cambridge, brother of the Prince Regent, was appointed gov.gen. of H.; and 1819 a new constitution was granted, in accordance with which the provincial states were retained and enlarged, and two representative chambers associated with them. Very little was done in the time of George IV. toward the amelioration of the administration, and the general disaffection and distrust had risen to the highest pitch, when William IV. ascended the throne. The influence of the French revolution of July (1830) extended to H., and, 1831, disturbances broke out at Osterode and Göttingen. These were speedily put down, but as the national discontent did not abate, the prime minister, Count Munster, long obnoxious to the mass of the people, was dismissed, and the Duke of Cambridge, who had hitherto acted as gov.gen., was invested with the title of viceroy, and entrusted with extensive powers. The duke recommended gradual reforms, but as the popular feeling was decidedly in favor of a thoroughly remodelled constitution, the states were again convoked; and finally, 1833, a draft of the proposed constitution, prepared by a commission appointed by the ministry and the states, was laid before William IV., and after it had been considerably modified in England, it received his signature, 1835, Sep. 26, without having been again submitted to the assembly of the states. The death of William IV., 1837, placed H. under the rule of the next male heir, Ernest August, Duke of Cumberland. One of the first measures of the new king was to abrogate the constitution of 1833, to which he had from the time of its adoption refused to give assent, and to restore that of 1819. When the govt. demanded the oath or allegiance from all persons holding office under the state, seven of the Göttingen professors—viz., Dahlmann, Gervinus, J. Grimm, F. Grimm, Ewald, Albrecht, and W. Weber—refused to take the required oath, in consequence of which all, without any preliminary investigation, were deprived of their chairs, and the three first banished from the country.

From this period till 1848, when the success of the

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French revolution compelled the German rulers to adopt a more liberal policy toward their subjects, the king showed himself resolutely averse to sanction reform. Liberal measures, however, were at length introduced, and the new constitution of 1848 was more liberal than that of 1833. The king, moreover, organized some useful reforms in the internal administration, and effected great improvements in several towns.

The chambers of H. showed great zeal in the reorganization of Germany, and King Ernest entered into a triple alliance with Prussia and Saxony, to promote the unity of the German nation. Unlike many of his German contemporaries, King Ernest kept the promises which he had made to his people during the revolutionary crisis of 1848-9; and though the nobility made most pressing appeals to him for recovery of their ancient privileges, and the overthrow of the constitution, he refused to withdraw his pledge that the country should be governed in accordance with constitutional principles; and such confidence was placed in his word, that, notwithstanding his avowed opinions, his death, 1851, was regarded as a serious blow to the cause of reform, for his son and successor, George V., was known to hold extreme views in regard to the kingly power and the claims of the aristocracy. The early measures of the new king were not calculated to allay the fears entertained of his policy; but the decisive declaration of the assembly of the states that they were desirous of seeing the reforms completed which had been begun by the late king, and their vote of want of confidence in the new cabinet, prevented any marked retrogressive movement on the part of the ministry, and 1854 H. joined the Zollverein. In 1855, the constitution underwent various modifications in accordance with the demands of the federal diet, by which it was made to approximate more closely to that of 1840: though the changes were unpopular, they met no energetic opposition. After the war of 1866, H. became a province of Prussia. For this period, see GERMANY.

HAN'OVER (Ger. *Hanno'ver*): formerly capital of the kingdom, now chief town of the province of Hanover; on a plain on both banks of the Leine—here crossed by ten bridges, and navigable hence to the ocean—about 100 m. s.s.w. of Hamburg. It consists of the old town, and the suburbs Glocksee and Linden: pop. with these inclusive (1900) 235,666. The older parts of city are mean and unattractive, but since 1837, when by the accession of Ernest-Augustus, Duke of Cumberland, to the throne, it became the residence of the sovereign, H. has undergone extensive improvements. In the Waterloo Platz, with its column surmounted by a figure of Victory, are the fine new barracks and arsenal. Besides these, the most interesting buildings are the stately town-hall in the market-place, founded 1439, with an adjacent public library of 40,000 vols.; royal library, with 170,000 vols. and 4,000 mss., incunabula, archives, and valuable state papers; the theatre, one of the largest in Germany; the king's palace; the museum, with natural history collections; a gallery of pic-

HANOVER COURT-HOUSE—HANSARD.

tures, etc.; and the royal state palace, built on the site of a monastery of Minorites 1632, notable for the magnificence of its interior decorations, and for the number and value of the objects of ancient and modern art which it contains, its fine gallery of paintings; its chapel, in which are preserved numerous relics and antiques, many of which were brought from Palestine by Henry the Lion 1172; and an altar-piece by L. Cranach. Among charitable institutions are the orphan asylum, school for the blind, infirmaries, hospitals, and poor-houses, the latter supported principally by private subscription. H. is well provided with educational institutions, the most noteworthy of which are the Georgianum, a collegiate school for the sons of noblemen: a lyceum, and a gymnasium. The city has also polytechnic, normal, and medical schools, and 25 free public schools. H. was the first place in Germany lighted with gas (1826). The discovery of a rich bed of asphalt in the neighborhood has been the means of giving the streets better side-pavements than in most other German towns, while recent improvements in the old system of sewers which dates from the 16th c., render the drainage particularly good. H. has gained pleasant walks and pleasure-grounds by the levelling and planting of the ramparts; while in the immediate vicinity of the town are the royal palaces of Herrenhausen and Montbrillant, whose beautiful grounds and gardens are freely opened to the public.

Since H. became a centre of the n. German railway system, its manufactures have greatly increased. Among the foremost are manufactures of cotton, wax-cloth, machinery, locomotives: also gold, silver, and bronze wares, chemicals, leather, and tobacco. The trade of the place also has rapidly developed of late years.

See Leutsch, *Ein Blick auf die Geschichte H.* (1827); Kobbe, *Abriss einer Geschichte d. Königreichs H.* (1823); Bülow, *Beiträge zur Gesch. d. braunsch.-luneb.-landes* (1829); Stieler's *Atlas* (1861); Thies, *Hannover und Umgegend* (1874).

HAN'OVER COURT-HOUSE, BATTLE OF: see CHICKAHOMINY, BATTLES OF.

HANSARD, *hän'sərd*: name well-known in connection with the printing of the British parliamentary records. The first of the family was Luke H. (1752, July 5—1828, Oct. 29; b. St. Mary's parish, Norwich). He came to London, worked some years as compositor in the office of Hughes, printer to the house of commons; and 1800 succeeded Hughes as sole proprietor of the business which is still carried on by his family. Competition and other causes have led to a division of the parliamentary printing, but the Messrs. H. still print the bills before parliament, the reports of committees, and some of the accounts.

The name of H. is connected with an important question of parliamentary privilege. The case was briefly as follows: A bookseller named Stockdale brought an action for libel against Messrs. H., the libel consisting of statements in the parliamentary reports which the latter had printed, and Lord Chief-Justice Denman decided in favor of Stockdale.

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The house of commons complained of a breach of privilege, and another action was raised in the court of queen's bench, but, as before, the plea of *the orders and privileges of the house* was overruled. After a third action had been brought, with similar result, an act of parliament was passed, directing that any proceedings against persons for publication of papers printed by order of either house of parliament are to be stayed by the courts of law, upon delivery of a certificate and affidavit that such publication is by order of either house.

The Hansards are, however, most widely known by the reports of the debates in parliament, published by them and bearing their name. When charges of inconsistency are made in parliament, they are usually verified or denied by a quotation from *Hansard*, the accuracy of which is seldom or never disputed. An opinion, in consequence, widely prevails that the Messrs H. retain a corps of parliamentary short-hand writers in their service, from whose reports the debates printed in their work are prepared. This popular impression is entirely erroneous. The speeches printed in H. are taken in the gross from the London morning newspapers. They are usually sent to the peers or members by whom they were spoken, for revision and correction, and many important alterations, expurgations and additions are made in the speeches thus revised, when a speaker has been led away by the heat of debate, or has, on the other hand, failed to say all that was in his mind when he rose. The convenience, however, of possessing some record more or less authentic of parliamentary proceedings, has led the executive government to take a certain number of copies of H. for distribution among public offices and departments. Many peers and members of parliament, foreign governments, and public libraries, also subscribe to this work, which is issued at a certain fixed price, which the Messrs. H. guarantee, at the commencement of each session, shall not be exceeded.

HANSEATIC.

HANSEATIC, a. *hǎn'sē-ăt'ík* [F. *hanse*, a corporation of merchants—from Icel. *handsál*, a contract: Goth. *handsa*, a band of men]: pertaining to the *Hanse towns*, certain towns in Germany, anciently associated for the protection of commerce. **HAN'SARD**, n. *-sěrd*, a merchant of a Hanse town. **HANSEATIC LEAGUE**, or **THE HANSA**, *hán'sa*: famous confederacy of the Hanse towns in the middle ages; a union, first mercantile, later municipal also; established in the 13th c., by certain cities of n. Germany, for mutual safety and for protection of their trade, at that period exposed to the rapacity of rulers, and the lawless attacks of marauders on land, and pirates at sea. Notwithstanding obstacles such as these, and the heavy imposts levied on the German traders by their princes, several towns of n. Germany, e.g., Hamburg, Lübeck, and Bremen, had acquired some commercial importance as early as the 11th c. The fame of the rich cargoes that found their way into their factories had given rise to swarms of pirates, who infested the mouths of the Elbe, and the outlets of the Baltic, and the necessity which the neighboring ports felt of protecting themselves effectually from such troublesome enemies, led, 1219, to the settlement of a compact between Hamburg, Ditmarsh, and Hadeln, to protect the course of the river and the adjacent sea. This agreement was followed two years later by a treaty of mutual aid and defense between Hamburg and Lübeck, which was joined, 1247, by the town of Brunswick; and thus was formed the German League or Hansa, the name of which indicated, in the Plattdeutsch of the traders, a bond or compact for mutual aid. The progress of the League was so rapid, that, before 1260, when the first diet met at Lübeck, which was the central point of the whole association, it had its regularly organized government, with a fixed system of finance and administration.

The entire League which at one period numbered 85 towns, and included every city of importance between Holland and Livonia, was divided into four classes or circles: 1. The Vandal or Wendic cities of the Baltic; 2. The towns of Westphalia, the Rhineland, and the Netherlands; 3. Those of Saxony and Brandenburg; 4. Those of Prussia and Livonia. The capitals of the respective circles were Lübeck, Cologne, Brunswick, and Danzig.

The cities composing the League were represented by deputies at the general diet, which met every three years generally at Lübeck, which was considered the capital of the League, to discuss and settle the current business of the League; and they held an extraordinary meeting every ten years, to renew the various unions which constituted the great Hansa. The edicts of the diet were communicated to the masters of the great circles, who remitted them to the several guilds within their respective jurisdictions.

Four large foreign factories were established at London (1250), Bruges (1252), Novogorod (1272), and Bergen (1278); and besides these and the ordinary members, various cities were connected by treaties of limited alliance with the League: as, for instance, Amsterdam, Antwerp, Bordeaux,

Barcelona, Cadiz, Dordrecht, Leghorn, Lisbon, Marseille, Messina, Naples, Ostend, Rotterdam, Rouen, Seville, St. Malo.

The Hanseatic League was the first systematic trade-union known in the history of European nations, and the high political influence which it rapidly attained was due to its development of sounder principles of trade than any that had hitherto been put into practice; while in the earlier periods of its existence, it exerted a beneficial action on the advance of civilization, which can scarcely be overated. Its professed object was to protect the commerce of its members by land and by sea, to defend and extend its commercial relations with and among foreigners, and as far as possible to exclude all other competitors in trade, and firmly to maintain, and, if possible, extend all the rights and immunities that had been granted by various rulers to the corporation. For the promotion of these ends, the League kept ships and armed men in its pay, the charge of whose maintenance was defrayed by a regular system of taxation, and by the funds obtained by the money-fines which the diet levied for infringements of its laws. In its factories, only unmarried clerks and serving-men were employed, and an almost monastic discipline was enforced; but the by-laws of the League prescribed a system of daily sports and light occupations for the recreation of the men, while sensible regulations for their comfort and cleanliness, and for the celebration of festivals at certain fixed times of the year, bear evidence of the sound sense that influenced the management of the Hansa, and was further shown by the injunction to the masters of factories to avoid everything that could hurt the prejudices of the foreigners among whom they were placed, and to conform in all things lawful to the habits of the country.

For many years the Hanseatic League was the undisputed mistress of the Baltic and German Ocean. It created new centres of trade and civilization in various parts of n. Europe, and contributed to the expansion of agriculture and other industrial arts, by opening new channels of communication by means of the canals and roads with which it connected together the members of its association. The greatest powers dreaded its hostility and sought its alliance, and many of the powerful sovereigns of the middle ages were indebted to it for substantial benefits.

In England, since the time of King Ethelred, German traders had enjoyed the same privileges as native-born Englishmen. Henry II. took the Cologne merchants, together with the house which they occupied on the Thames, specially under his protection, allowing to them and their successors the privilege of exporting goods free of duty, and selling their Rhenish wines for the same price at which French wines were then sold in London; and in 1261 these privileges were extended by Henry III. to all the Germans in London who had a share in the Hanseatic Factory, or *Aula Teutonicorum*, long known to Londoners as the 'Steelyard.' In 1338, the Hansards gained the good-will of Edward III. by supplying him with the money neces-

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sary to redeem the regalia and coronation jewels of his queen, which he had pledged to Cologne money-lenders, and by allowing him to draw upon their houses for large sums with which to defray the cost of his French wars. Their relations to other sovereigns at that period were equally significant of their power, for they defeated Kings Eric and Hakon of Norway, and King Waldemar III. of Denmark, 1348, deposed Magnus of Sweden, and bestowed his crown upon Duke Albert of Mecklenburg; and 1428 equipped a fleet of 248 ships, carrying 12,000 soldiers, against Eric of Denmark.

With the 15th c. the League reached at once its culminating point and its decline, for in proportion as the seas and roads were better protected by the states to which they belonged, and rulers learned to comprehend the commercial advantages of their dominions, both its necessity and its supremacy declined; while the discovery of America, and of a new sea-route to India, gave an entirely different direction to the trade of Europe. The Hansa had, moreover, arrogated to itself, in the course of time, presumed rights of imposing the greater and lesser ban, and exercising acts of sovereignty and judicial power, incompatible with the supremacy of the rulers in whose states they were enforced; hence the League was necessarily brought into frequent collision with the local authorities. Thus, in accordance with their system of exclusive policy, the Hansards refused to grant to merchants trading in foreign parts the same privileges in the Hanseatic cities which they themselves had enjoyed for centuries in England, Russia, and Scandinavia, and hence arose dissensions which frequently ended in a fierce maritime warfare. By way of retaliation for the pertinacity with which the League refused to grant to the English the same immunities which had been accorded to traders of other nations, parliament required that Germans should pay the tax on wool and wine, which was enacted from all other foreigners in the English markets; and though the Hansards strongly resisted, they were at length condemned by the courts, 1469, to pay a fine of £13,500; and they would probably have lost all they possessed in England, if their cause had not been advocated by Edward IV., who had more than once been indebted to them for money and aid, and who 1474 secured for them, by a clause in the treaty of Utrecht, a restitution of nearly all their former rights in England. In 1598, their obstinate pertinacity in insisting upon the maintenance of their old prerogatives, notwithstanding the altered condition of the times, drew on them the anger of Queen Elizabeth, who dispatched a fleet under Drake and Norris to seize the ships of the Hansa, of which 61 were captured, while she banished the Hansards from their factory in London. These measures had the desired effect of compelling the League to receive English traders on equal conditions, and thenceforward the Hansards were permitted to occupy the Steelyard, as in olden times. The Hansa had, however, outlived its date, and at the diet at Lubeck 1630, the majority of the

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cities formally renounced their alliance. Hamburg, Lübeck, Bremen, and, for a short time, Danzig, remained faithful to their ancient compact, and continued to form an association of free republics, that existed unchanged till 1810, when the first three were incorporated in the French empire. These, in 1813, combined with Frankfurt-on-the-Main to form a union. Frankfurt became Prussian in 1866; whereas at a convention in July 1870, the powers and privileges of the three free towns were re-established and re-organized, and under the empire they retained their local self-government. See Sartorius, *Gesch. des hanseatischen Bundes* (1802-08); Barthold, *Gesch. der deutschen Hansa* (1854); *Hansische Geschichtsblätter* (1871-77).

HANSEL: see HANDSEL.

HANSE TOWNS: see under HANSEATIC.

HANSI, *hân'sê*: town of the dist. of Hissar, province of the Punjab, 89 m. n.w. of Delhi; lat. 29° 6' n., and long. 76° 3' e. It is watered by a branch of the Delhi canal, made 1356 by Feroz Toghluq, and cleared 1825 by the British government. This work, besides its domestic and agricultural uses, is available for navigation. Pop. (1881) about 14,000.

HANSOM, n. *hân'sûm* [after the inventor]: a kind of cab or two wheeled hackney-carriage, in which the driver has his seat behind the passenger instead of in front of him.

HANSTEEN, *hân'stân*, CHRISTOPHER: 1784, Sep. 26—1873, Apr. 15; b. Christiania, Norway: astronomer. At first intended for the legal profession, he turned to mathematical science. In 1814, he was appointed to the chair of mathematics in the Univ. of Christiania, and there, 1819, published his celebrated work on Magnetism, translated into German under the title *Untersuchungen über den Magnetismus der Erde*: it produced a great sensation, especially in England, so much so, that in almost all voyages of discovery since undertaken, magnetic observations have been made in conformity to his directions. In 1821, he discovered the 'law of magnetic force': see MAGNETISM. He journeyed to Siberia for magnetic observations 1828-30. Besides occupying his chair in the univ., H. was prof. of mathematics in the School of Artillery, superintended the triangulation of Norway, and helped in the reorganization of the national system of weights and measures. He published lectures on astronomy, a work on mechanics, another on geometry, and several memoirs.

HANTLE, n. *hân'tl* [corruption of *handful*: prov. Ger. *hampel*, a handful]: in *Scot.* and *OE.*, a handful; a considerable quantity; much; many.

HANUMÂN, or HAÛNMÂN, *hân'û-man* (nominative of the Sanskrit base *Hanumat* or *Hanûmat*, literally meaning, 'having a jaw,' but understood to imply 'having a broken jaw'): a fabulous monkey, a deity playing a great rôle in the legendary history of the second or classical period of Hindu mythology. He is represented there as the strenu-

ous friend and ally of Vishnu, when the latter, in his incarnation as Râma, made his expedition to Ceylon to recover his wife Sîtâ, carried off by the giant Râvana: see VISHNU. In the war between Râma and Râvana, H. is related to have bridged over the ocean between the continent of India and Ceylon with rocks of a prodigious size, and to have performed many other amazing feats. These are related in the great poem *Râmâyana*, which gives history of Vishnu in his descent on earth as Râma, and, in many of its chapters, dwells with particular predilection on H. the monkey. Of his origin, the older version of this epos relates that his mother was an Apsaras or nymph, *Punjikasthalâ*, who, through some curse, was born as the daughter of a monkey, and under the name *Anjanâ*, became the wife of the monkey *Kesarin*. She transformed herself into a human shape, and, walking in splendid attire on a mountain-top, fascinated *Vâyu*, the god of wind, with the result that the child H., was born. When a child, H., lying on the lap of his mother, saw the sun rise, thought it a fruit, and started into the air to take it; but Indra, angry at his presumption, hurled him down with his fiery thunderbolt to the top of the mountain, where in his fall he broke his left jaw.

H. is the type of the monkeys worshipped by a certain class of Hindus. The foundation of the myth is probably historical. There is no reason to doubt tradition when it tells us that a hero—it calls him Râma—carried Brahmanic institutions from n. India to Ceylon, and we may believe it also when it connects this expedition with a war between the Brahmanic population of India and that of Ceylon. Nor is it improbable that Râma, on his march to the south, gained allies, who, on account of their barbarous condition, were compared by his followers to monkeys. With this, all that may be real in the myth of H. seems to end; its other ingredients are either legendary or represent physical phenomena. When Râma ceased to be the human hero, and became an incarnation of Vishnu, the necessary consequence was that the connected history also became imaginary. Vishnu is in the Vedas a deity representing attributes of the sun; and the legends of the birth of his ally, H., are such as would originate in phenomena connected with sunrise. To this the names ascribed to his mother seem to point; for the Apsarasas 'were originally personifications of the vapors which are attracted by the sun, and form into mists or clouds;' and *Anjanâ*, among other meanings, signifies night.

HANWAY, *hăn'wā*, JONAS: 1712–1786, Sep. 5; b. Portsmouth, England: philanthropist. In early life he was engaged in mercantile business in St. Petersburg, which necessitated an extensive journey in Persia, 1743–50; and on his return to England, he published *Historical Account of British Trade over the Caspian Sea, with a Journal of Travel*, 4 vols. (1753–4). He also published a *Journal of Eight Days' Journey from Portsmouth to Kingston-upon-Thames* (1756), and nearly 100 pamphlets on a variety of philanthropic projects. He was one of the founders of the Lon-

HAN-YANG-FOO--HAPSBURG.

don Marine Educational Soc., and of the Magdalen Hospital; was instrumental in securing the passage of laws for the amelioration of various kinds of suffering; and was a liberal supporter of benevolent enterprises. He has a popular repute as the first Englishman who carried an umbrella in England. This he did amid the jeers and hootings of the populace.

HAN-YANG-FOO': see HANKOW.

HAP, n. *hǎp* [Icel. *happ*, chance; *henda*, to seize, to happen: F. *happer*, to hap or catch]: that which we catch; that which falls to our lot; luck; chance; accident; fortune: V. in *OE.*, to come by chance; to happen. HAP'PING, imp. HAPPED, pp. *hǎpt*. HAP'LESS, a. -*lēś*, unlucky. HAP'LY, ad. -*lǐ*, by chance; casually. HAPHAZARD, n. -*hǎz'ērđ* [*hap*, and *hazard*]: chance; accident. HAPPEN, v. *hǎp'n*, to come by chance; to fall out; to befall; to light upon; to occur. HAPPENING, imp. *hǎp'nǐng*. HAPPENED, pp. *hǎp'nd*.

HAP, v. *hǎp* [a corruption of *lap* or *wrap*: Icel. *hiupr*, underclothing: Norw. *haufn*, a covering, a gown]: in *Scot.* and *OE.*, to cover for concealment, or for defense from cold; to wrap up warmly; to clothe: N. a covering of whatever kind; a warm covering. HAP'PING, imp. HAPPED, pp. -*hǎpt*.

HAPHAZARD: see under HAP 1.

HAPLOMI: see ESOCIDÆ: MALACOPTERYGII: PIKE.

HAPPEN: see under HAP 1.

HAPPILY, HAPPINESS; see under HAPPY.

HAPPY, a. *hǎp'pǐ* [from *hap* 1]: having good hap; possessed of or enjoying pleasure or good; fortunate; propitious; harmonious; agreeable; strikingly appropriate, as a speech. HAP'PILY, ad. -*lǐ*, fortunately; successfully; in a state of felicity; gracefully. HAP'PINESS, n. state in which the desires are satisfied; state of mind resulting from the enjoyment of good; felicity. HAPPY DISPATCH, in *Japan*, suicide under legal sanction, and as a mark of consideration to the sufferer, instead of a public execution; a voluntary death in this manner to avoid disgrace (see HARA-KIRI). HAPPY MAN BE HIS DOLE, in *OE.*, may his dole or share in life be that of the happy man.—SYN. of 'happily': fortunately; prosperously; luckily; successfully; gracefully; dexterously; felicitously;—of 'happiness': beatitude; blessedness; bliss; blessing.

HAPSBURG, *hǎps'bērg*, Ger. *hǎps'búrch* (or HABS-BURG), HOUSE OF: old German family which has given sovereigns to Germany, Spain, and Austria; of which the imperial family of Austria are the representatives. It derived its name from the castle of Habsburg, originally Habichtsburg (Hawk's Castle), on the right bank of the Aar, in the Swiss canton of Aargau. The castle was built in the 11th c. by Werner, Bp. of Strasburg, grandson of Gunthrun the Rich, Count of Alsace and Breisgau, who, according to the Austrian chroniclers, was descended from Ethico I., Duke of Alemannia and Alsace in the 7th c.

HÁPUR—HARA-KIRI.

Werner delivered the castle to his brother Kanzeline, whose nephew, Werner II., was the first who assumed the title Count of Hapsburg. Albrecht or Albert III., great-grandson of Werner II., assumed the title Landgraf of Upper Alsace, or Sundgau. This prince possessed a great part of Swabia, Alsace, and the Aargau, to which his son, Rudolf I., added Lauffenburg. On his death, 1232, his sons, Albert IV. and Rudolf II., divided their father's possessions—Rudolf becoming the founder of the Hapsburg-Lauffenburg line. This branch became extinct 1408 in Germany, but is still represented in England by the Fielding family. The whole possessions of Rudolf's lineage reverted to the Austrian line, 1415. Albert IV. laid the foundation of the future greatness of the House of H. He left three sons, the eldest of whom, Rudolf III. (Rudolf I. of Austria), succeeded him, and, by appropriating the provinces which, as emperor, he had wrested from Ottocar of Bohemia,—viz., Upper and Lower Austria, Styria, Carinthia, and Carniola,—greatly increased the power of his family. His son, Albrecht or Albert I. (q.v.), succeeded 1291 to the family possessions. The further history of the House of H. may be traced in that of Austria (q.v.). It may be noted here that Ernest, surnamed the Iron, one of the sons of Leopold II., and founder of the Styrian line, married Cymburga daughter of Ziemovitz, Duke of Masovia (now province of Warsaw), and niece of Uladislav Jagellon, King of Poland, celebrated in Austrian history for her beauty, wit, and strength of body. From her are said to be derived the thick lips characteristic of the Austrian family. In 1881, the castle of H. was bought from the authorities of Aargau, and given as a wedding-gift by the Bohemians to the Crown Prince of Austria.—Compare Prince Lichnowski, *Geschichte des Hauses Habsburg* (1837), also Coxe's *House of Austria*.

HÁPUR, or HAPPOOR, or HAUPUR, *haw-pôr'*: town of British India, in the N.W. Provinces, dist. of Meerut, 20 m. s. of the town of Meerut. There are 28 mosques and 25 temples. Government has a breeding-stud here, which has obtained celebrity for the character of the horses passed into the different branches of the service. Pop. (1872) 14,544, of which 8,696 are Hindus, 5,847 Moham-medans.

HARA-KIRI, *há'ra-kē'rē* (*Belly-cut*), also called 'Happy Dispatch: curious Japanese mode of official suicide, according to a system obsolete since 1868 (see JAPAN). The Japanese estimated the number of such suicides at 500 per annum. All military men, and persons holding civil offices under the government, were held bound, when they had committed any offense, to rip themselves up. This they performed by two gashes, in the form of a cross; but they might not do it until they had received permission from the court to that effect, otherwise their heirs would run the risk of being deprived of their place and property. Frequently, at the death of superiors or masters, the same operation was self-inflicted by those who desired to exhibit

HARALD I.—HARAR.

devotion and attachment; sometimes also, in consequence of a disgrace or affront, it was resorted to when no other resource was left. H.-K. severed the large artery in front of the spine, and thus brought easy death.

HAR'ALD I., King of Norway; see HAROLD I., King of Norway.

HAR'ALD III., King of Norway: see HAROLD III., King of Norway.

HARAN, *hā'ran*, or CHARRAN, *kār'an*: district in the n. of Mesopotamia, where Terah and Nahar, attracted by its extreme fertility, stopped after their migration from Ur of the Chaldees, while Abraham and Lot continued onward to Canaan.—Haran was the name also of an important strategic town 10 m. s.e. of Edessa (Orfa), on the bank of the Belik river, 50 m. n. of its junction with the Euphrates, at the point where the highways from Media, Assyria, and Babylonia meet to follow the same road to the Cilician coast. (See II Kings, xix. 12; Isa. xxxvii. 12.) Its position gave it a large commercial importance (Ezek. xxvii. 23). In later days it was the scene of the defeat and death of Crassus by the Parthians B.C. 53, and of the murder of Emperor Caracalla, at the instigation of Macrinus, A.D. 217; was the seat of the Haranite Sabians, a heathen sect of the middle ages; retained its importance till the Arabs began to gain the ascendancy; subsequently fell into decay, and is now a mass of ruins.

HARANGUE, n. *hă-răng'* [F. *harangue*—from It. *arenga*, a ring, a public set speech; *arringare*, to place the audience in a ring for hearing, to make a set speech—from O.H.G. *hring*, an arena, a ring: comp. Gael. *aran*, discourse, dialogue]: *literally*, to address a number of people arranged in a ring; a popular oration; a public address. V. to make a speech or to give an address to a large assembly. HARANG'UING, imp. HARANGUED, pp. *hă-răngd'*. HARANG'UER, n. -*er*, one who.—SYN. of 'harangue, n.': a speech; address; oration; declamation; a ranting.

HARAR, *hă-râr'*, or HURRUR, *hō-rôr*, or ARARGE: city of e. Africa, in the country of the Gallas, about 220 m. s.w. of Berbera, which lies opposite to Aden, at the mouth of the Red Sea. The city, about 5,500 ft. above sea-level, is on the slope of a hill. To the e. are plantations of bananas, citrons, limes, the coffee-tree, the khat—a theine plant well known in Arabia—wars or 'bastard saffron,' and sugar-cane. Westward are gardens and orchards on a terraced slope; northward is a hill covered with tombs; and to the south, the land descends into a valley or ravine. It is about one m. long by half a m. broad. The streets and alleys are like mountain-roads, strewn with rubbish and with heaps of rocks; and the abodes, built of sandstone and granite, cemented with a reddish clay, present a dingy appearance. H. is surrounded by an irregular wall, pierced with five large gates, and defended by rudely-built oval turrets. The men are engaged in trade; while the women spin, weave, and cultivate the gardens. Morals are very lax, and the people are much addicted to intoxi-

HARASS—HARBINGER.

cation with mead and Abyssinian beer. H. is celebrated for sanctity, erudition, and fanaticism. The people are extremely bigoted, and hold all foreigners, particularly Christians, in hatred and contempt. H. is the grand *dépôt* for the coffee, the wars-dye, the cotton, the gums, the tobacco, and the grain of the Galla country, the produce of which is conveyed to Berbera three times a year, in immense caravans. There is also an enormous slave-trade carried on. The imports are American cottons, shawls, silks, brass, copper, cutlery, dates, rice, sugar, gunpowder, and paper. Provisions are exceedingly cheap.—H. became Mohammedan 1521; was conquered by Egypt 1875, and given up again 1884. Burton, who spent ten days there 1855, disguised as an Arab, and at a great risk to himself, was the first European who reached the place. The Harari are a distinct people, with a language of their own, which some affirm to be Semitic (allied to Amharic), others to be only partially Semitic. Many of the inhabitants are Arabs, and many Somalis. Pop. variously estimated, 10,000 to 30,000.

HARASS, *v.* *hār'ās* [F. *harasser*, to tire or toil out, to vex—from the figure of setting on a dog: Norw. *hirra*, and *hissa*, to set on a dog]: to fatigue or weary to excess; to weary with importunity or care; in *mil.*, to inflict on an enemy perpetual trouble, annoyance, and injury by incessant petty attacks. **HAR'ASSING**, *imp.*: **ADJ.** fatiguing; teasing. **HARASSED**, *pp.* *hār'äst*. **HAR'ASSER**, *n.* *-sēr*, one who.—**SYN.** of 'harass': to weary; jade; tire; fatigue; perplex; tease; distress; vex; molest; trouble; disturb.

HARBINGER, *n.* *hār'bīn-jēr* [OF. *herberger*, to harbor, to lodge: O.H.G. *hereberga*, a lodging, a harbor: AS. *heribyrigan*; Scot. *herbery*, to give lodgment or quarters to]: *literally*, one sent forward to provide quarters for an army; one who looks out for lodging or a harbor for another; a forerunner; a precursor. **HAR'BINGERED**, *a.* *-jērd*, preceded by a harbinger.

HARBOR.

HARBOR, n. *hâr'bôr* [mid. L. *heribergum*, the duty of lodging officers on public service—from O.H.G. *heri*, AS. *here*, an army; and Ger. *bergen*, AS. *beorgan*, to shelter: Ger. *herberge*; It. *albergo*; OF. *herberge*; F. *auberge*; Icel. *herbergi*, a lodging, an inn, a harbor]: a place of rest, security, and retirement; a shelter; a port or haven for ships: V. to shelter; to secure; to secrete; to entertain, as bad thoughts, and revenge. **HAR'BORING**, imp. **HAR'BORED**, pp. *-berd*. **HAR'BORER**, n. *-ber-er*, one who. **HAR'BORAGE**, n. *-āj*. shelter. **HAR'BORLESS**, a. shelterless. **HARBOROUGH**, n. *hâr'būr-ō*, in *OE.*, a lodging. **HARBOR-MASTER**, an officer who sees that all the harbor regulations are duly attended to.

HAR'BOR: inlet of the sea or other large body of water, so protected from the winds and waves, whether by natural conformation of the land, or by artificial means, as to form a haven for protection of vessels during storms, or a port for commercial purposes. It is with harbors wholly or in part artificial that this article will deal.

Artificial harbors may be divided into harbors of refuge, and those for commercial purposes. Many of the latter are tidal—i.e., capable of being entered by vessels only at certain states of the tide. The former are roadsteads of good depth, protected by breakwaters, and accessible at all tides, where ships may take refuge during storms. The two kinds are sometimes combined, there being the H. proper, and a capacious protected roadstead outside of it, as at Cherbourg and elsewhere. See **BREAKWATER**: **CHERBOURG**: **DOVER**: **PLYMOUTH**: **PORTLAND**: **HOLYHEAD**.

With the birth of commerce and naval warfare, in the earliest ages of civilization, arose the necessity for artificial harbors. The Phœnicians, fathers of navigation, soon set to work to protect their scanty strip of Levantine coast. At Tyre, two harbors were formed, n. and s. of the peninsula on which the city stood. At Sidon, similar but less extensive works long testified to the wealth and engineering genius of the Phœnicians. The breakwaters were constructed principally of loose rubble.

Carthage, in another part of the Mediterranean, also possessed a H., though its site is not satisfactorily determined. It was in two divisions, formed by moles; time, however, has dealt so hardly with it, that few traces remain. Still keeping to the great inland sea, we come to Greece; but here nature had provided so many navigable inlets, that little remained to be done by man. Nevertheless, some minor works were executed at the Piræus and elsewhere, chiefly, of course, for warlike purposes. The Romans, finding ships necessary to the dominion of the world, set about constructing harbors for them, in their usual solid and workmanlike manner. The coasts of Italy still show how well they understood both the principles and the practice of this branch of marine engineering. Below is given a plan of the ancient port of Ostia (now two or three miles inland), one of their finest and most complete undertakings of this nature. A distinguishing feature of their H.-making is the open or arched mole. Built with open

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arches, resting upon stone piers, it gives full play to the tidal and littoral currents, thus preventing the deposit of sand or mud; but in proportion as this advantage is increased (by increasing the span of the arches), so also is the agitation, and consequent insecurity of the water within.

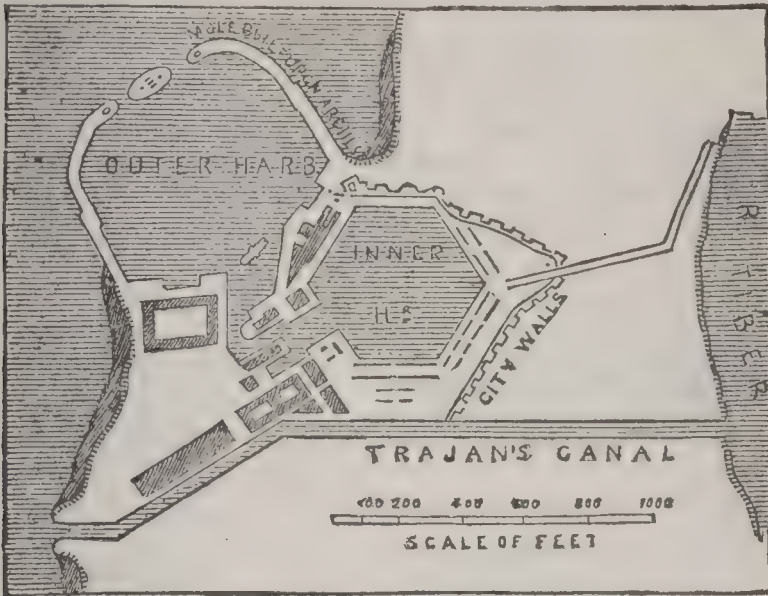


Fig. 1.

Ancient harbor of Ostia, at the mouth of the Tiber.

The decay of commerce and civilization, consequent upon the fall of the Roman empire, put a stop to H.-making; nor could any want of the art be felt, until the revival of commerce by the Italian republics of the middle ages. But the rich traffic of Venice and Genoa soon led to the construction of suitable ports at those places; and the moles of the latter city, and the works in the lagunes of Venice, remain to this day. France was next in the field, embanking, protecting, and deepening the mouths of the rivers along her n.w. shores, as at Havre, Dieppe, Dunkirk, etc. In 1627, during the siege of Rochelle, Metezeau constructed jetties of loose rubble-stone, to prevent access to the city.

Meanwhile England, whose ocean-commerce is of comparatively recent date, and whose fisheries even scarcely



Fig. 2.

Dover harbor; temp. Henry VIII. Cott. Aug. ii. 22 and 23.

employed a vessel 300 years ago, lagged far behind her continental rivals. With few exceptions, her ports were absolutely unprotected, or rather uncreated; and this state

HARBOR.

of things continued until late in the 18th c. One of the few exceptions was Hartlepool, where a H. was formed about 1250; and Arbroath, 1394. In the 17th c., at Whitby and Scarborough, also in Yorkshire, rough piers were thrown out, protecting the mouth of the port; while at Yarmouth, in Elizabeth's reign a n. jetty, and subsequently a s. one, were formed. An ancient mole existed at Lyme Regis, a section of which, from Mr. Smile's *Lives of the Engineers*, is given below (see fig. 3). But the chief efforts of the early English engineers were directed against the shoals and waves of Dover. When, however, Smeaton rose to vindicate the engineering talent of England, improvement began; and now few countries surpass Great Britain in the

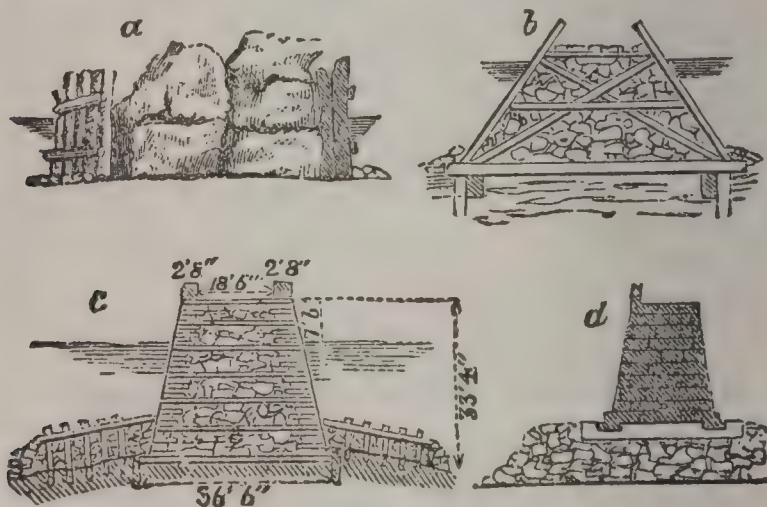


Fig. 3

a, ancient pier at Lyme Regis; b, wooden-framed pier, filled with rubble; c, pier at Havre, with apron; d, masonry pier, on rubble foundation.

number of artificially improved commercial harbors, or in the appreciation of their importance.

In the construction of a H. the great desiderata are sufficient depth of water and perfect security for the vessels likely to frequent it, together with the greatest possible facilities for ingress during any weather; while the chief obstacles to be surmounted are the action of the waves upon the protecting piers and breakwaters, and the formation of sand-banks and bars.

The purpose of harbors may be classified under the following heads: 1. Harbors of refuge and anchorage breakwaters; 2. Deep water and tidal harbors for commercial purposes; 3. Kanted or curved piers; 4. Straight piers; 5. Quays or wharfs.

These different works are obviously suited for different localities, and for contending with different exposures. The last-mentioned is clearly suited for the most sheltered situations only, and the engineer must consider, when designing a H., which of all those will be most economical and effective. In judging of this, the geological features of the coast must be carefully considered. A good chart furnishes valuable evidence as to the forces to which H.-works will be exposed. Among those may be noted the *line of maximum exposure*, or the greatest fetch or reach of open

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sea in front of the H. Thomas Stevenson, English civil engineer, has proved by observations that *the waves increase in the ratio of the square root of their distances from the windward shore* as measured along the line of exposure, and he gives the following simple formula: Where h = height of wave in ft. during a strong gale, and d = length of exposure in miles for distances of say 10 m. and upwards:

$$h = 1.5 \sqrt{d}.$$

The heights so obtained will be increased when they pass into confined channels, and decreased when they pass into expanding channels. The greatest measured height of the waves was by Scoresby in the Atlantic Ocean, where he found billows 43 ft. in height from hollow to crest, and 36 ft. was not infrequent. At Wick, Caithness-shire, Scotland, waves of about 40 ft. strike the breakwater.

The greatest recorded forces exerted by the waves are the following: A mass of 13 tons was broken or quarried out of its position *in situ* on the Skerries of Whalsey, in Zetland, at a level of 74 ft. above the sea; but the most astonishing work of waves of which we have knowledge was at Wick breakwater, where, in the winter of 1872, a mass of masonry, concreted together as a monolith, and bound with iron bars $4\frac{1}{2}$ inches in diameter, all weighing no less than 1,350 tons, was torn from its seat in the work, and thrown to leeward, where it still lies unbroken.

Thomas Stevenson, by means of an instrument called the Marine Dynamometer, has ascertained *numerically* the force exerted by the waves in the Atlantic and German Oceans, and has found that the mean of observations during winter was more than three times that exerted during summer, the maximum force recorded being $3\frac{1}{2}$ tons per sq. foot.

Various local causes materially affect the height, and therefore the force of the waves. In some cases, where a strong current sets off the coast, as at Sumburgh Head roost, in Zetland, it causes a dangerous breaking sea, and while this roost or race continues to rage, the coast under lee is comparatively sheltered; but when the force of the tide is exhausted, and the roost disappears, a heavy sea rolls in upon the shore.

It is this encounter between the ground-swell of the ocean and the current of tide or land water, which causes miniature races of the mouths of rivers. Another most material element in the question of exposure is the depth of water in front of the H.; for if that depth be insufficient to admit of the propagation of the waves, they break or spend themselves before they reach the piers. Thus, Leslie found at Arbroath H. that the works were not so severely tried by the heaviest waves as by others of less size which were not tripped up and broken by the outlying rocks. In the same way by the river Alne, the H. within the bar is more disturbed by ordinary waves than during great storms. It thus appears that the largest waves are not always so destructive as smaller ones. Scott Russell has stated the law, that waves break whenever they come to water as deep as their own height; so that 10 ft. waves should break in

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10 ft. water, and 20 ft. waves in 20 ft. water. There seem, however, to be some waves which break on reaching water whose depth is equal to twice their own height. Proofs of the depth to which the surface undulations extend have been given by Sir George Airy, Sir John Coode, Capt. Calver, and John Murray, c.E. Dr. Rankine showed that the crest and trough of the sea are not, as was generally believed, equidistant from the level of stagnant water. When l is the length of the wave, H its height from trough to crest,

$$\text{Crest above still water} = \frac{H}{2} + \cdot7854 \frac{H^2}{l}.$$

$$\text{Trough below still water} = \frac{H}{2} - \cdot7854 \frac{H^2}{l}.$$

There is much difference of opinion among engineers as to the best profile or cross-section of breakwaters for a deep-water H . It is asserted by Col. Jones and others, that in deep water the waves are purely oscillatory, having no power of translation, and therefore incapable of exerting any force against the masonry. This, however, is incorrect, and liable to lead to dangerous consequences. Were there no wind propelling the waves, and no current to interfere with their character, such a result might be true. This, however, is not the case, and all sea-works, in whatever depth of water, will assuredly have to withstand impulsive action. Besides, it must be kept in view, that to reduce the expense of construction, it is essential, where the bottom is soft, to make the foundation a pile of loose rubble, or concrete blocks. It follows, from what has above been said, that the rubble, by shoaling the water in front of the work, will cause the waves to become waves of translation before they reach the vertical superstructure, which, assuming the waves to have been simply oscillatory, would have reflected them without breaking, and therefore without their having exerted an impulsive force upon the masonry.

There is, however, no fixed rule as to the profile of any sea-work; the profile must necessarily depend on a variety of local peculiarities, such as the nature of the bottom, and the size and quality of the materials. While a long, sloping breakwater does not offer the same amount of resistance to the waves, neither is it in itself so strong, for the weight resting on the face-stones is decreased in proportion to the sine of the angle of the slope. On the other hand, the tendency of the waves to produce horizontal displacement, supposing the direction of the impinging particles to be horizontal, is proportional to the cube of the sine of the angle of elevation of the wall.

In tidal harbors, or those in shoal-water, it is admitted by all that the waves break, and therefore exert an impulsive force. Such works have to withstand (1.) The direct horizontal force which tends to remove the masonry; (2.) The vertical force acting upward on projecting stones or protuberances, and against the lying beds of the stones;

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(3.) The vertical force acting downward on the talus wall, or passing over the parapet, and falling upon the roadway; and (4.) The back-draught, which is apt to remove the soft bottom in front of the work.

In designing the ground-plan of a H., some rules should be kept in view: (1.) The entrance should be always kept seaward of the works of masonry; (2.) Long straight piers are not so secure as those of horizontal curvature; (3.) There should be a good 'loose,' or point of departure for vessels free of rocks or a lee shore; (4.) The relation of the width of entrance to the area of a H. should be a matter of careful study, as on this depends the tranquility of the interior, or what has been called the reductive power of the harbor. Stevenson's formula for the reductive power is as follows: H = height of wave at entrance; b = breadth of entrance; B = breadth of harbor to place of observation; D = distance from mouth of harbor to place of observation; x = reduced height of wave at place of observation.

$$x = \frac{H \sqrt[4]{b}}{\sqrt[4]{B}} - \frac{(H + H \frac{\sqrt[4]{b}}{\sqrt[4]{B}}) \sqrt[4]{D}}{50}.$$

J. M. Rendel's plan of depositing rubble from open stages of pile-work is now universally used in the construction of deep-water piers. Sir J. Hawkshaw's method, adopted at Holyhead, consists of huge, irregular, undressed masses, set in hydraulic mortar, and resting upon *pierres perdues*.

The commercial value of a H. increases, according to Stevenson, not simply as the depth of the water is increased, but as *the cube of the depth*. Hence the great expense which is willingly incurred for securing even a foot or two of additional depth. One of the great feats in deepening is at the Tyne, where Mr. Ure, C.E., dredged out the channel to 20 ft. at low-water all the way up to Newcastle. Scouring also is employed for increasing the depth, as by Sir W. Cubitt at Cardiff, Wales, where 2,500 tons of water a minute are let off. Rendel's scheme for Birkenhead was based simply on the quantity liberated and the sectional area of the channel, and was therefore operative for any distance, and did not depend on the propelling head, or on the direction in which the water left the sluices, which conditions regulate ordinary scouring on the small scale, and which is efficacious for only short distances from the outlet.—Docks (q.v.) of various kinds are connected with harbors.

Pine timber is admirably adapted for soft soils, when the exposure is not great, but owing to the ravages of the *Teredo navalis* and *Limnoria terebrans* in localities where there is no admixture of fresh water, it is soon destroyed. Greenheart, African oak, and bullet-tree are little affected by the worm, as shown by experiments 1814 at the Bell Rock by Robert Stevenson. Even limestone and sandstone are perforated by the *Pholades* and *Saxicavæ*. Met-

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als also suffer from chemical action when immersed in salt-water. George Rennie's experiments showed that wrought-iron resists this action better than cast in the ratio of 8 to 1; while Mallet's experiments show that from $\frac{1}{10}$ to $\frac{4}{10}$ of

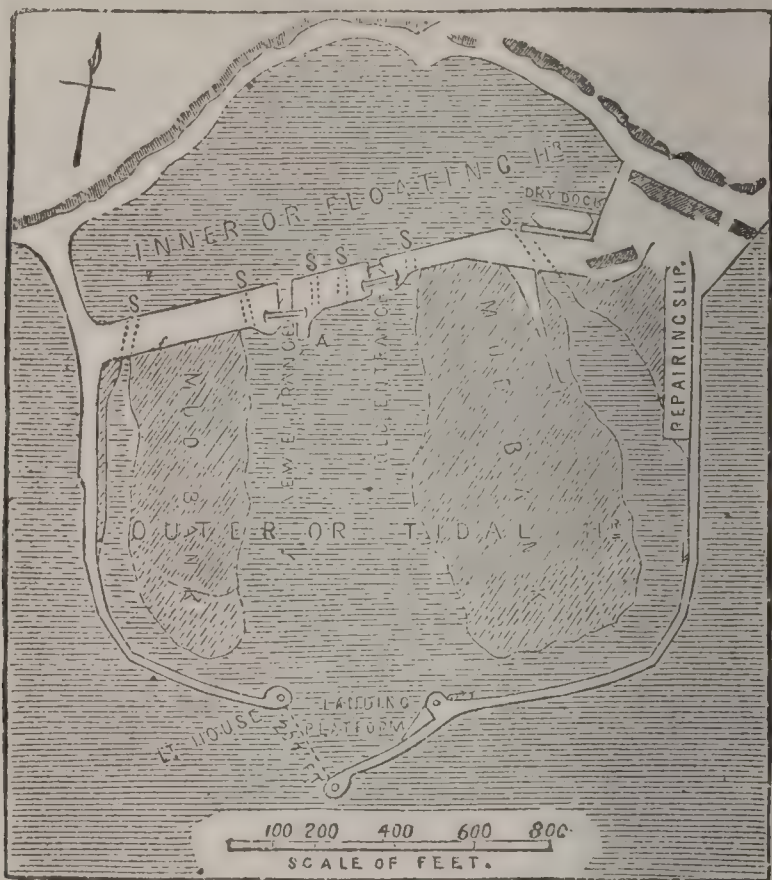


Fig. 4.—Ramsgate Harbor:

S, sluices; A, jetty, with openings for passage of currents.

an inch in depth of castings 1 inch thick, and about $\frac{6}{10}$ of wrought-iron, will be destroyed in a century in clean salt-water. A cannon-ball $4\frac{1}{2}$ inches in diameter became oxidized to the extent of $\frac{3}{4}$ of an inch in the century. The use of Portland cement may be regarded as the most important, recent improvement in materials for H. construction. Blocks of any size can be formed of sand, gravel, or stones, mixed with cement in the proportion of 1 of cement to 9 of the other materials. This will set readily in still water, and in a week will be nearly as hard as any ordinary sandstone. Sea-walls of cement work can also be built continuously, so as to constitute a single monolithic mass.

The U. S. sea-coast is well supplied with natural harbors, mostly needing no large works of improvement. The principal artificial harbor is at Lewes, Del. On the great lakes natural harbors are few, and those mostly need extensive improvements. Many small artificial, or mostly artificial, harbors have been constructed. The harbors at Chicago, Cleveland, Oswego, Dunkirk, and Buffalo, are in large part made by deepening the mouths of shallow rivers, and enlarging the protected area by breakwaters.

Reference may be made to Sir J. Rennie's book on *Har-*

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bors, to that of Thomas Stevenson on the same subject, and to Minutes of the Institution of Civil Engineers, *passim*.

HARBOR GRACE: town, cap. of Harbor Grace dist., Newfoundland; on an arm of Conception Bay; lat. $47^{\circ} 41' 28''$ n., long. $53^{\circ} 12' 33''$ w.; 30 m. w.n.w. of St. Johns. It has a splendid harbor, $5\frac{1}{2}$ m. in extent, largely open to the sea but with commodious and safe wharfage and inner anchorage. It is the seat of a Rom. Cath. bp., contains a handsome cathedral, court-house, jail, convent, several public and parish schools, gas and water-works, govt. savings bank, and a weekly newspaper; and has large trade in cod and seal. It ranks after St. Johns in commercial importance and population. Pop. (1901) 5,184.

HARBORS, or PORTS, in Law: considered as belonging to the government so far as concerns the right to erect and to hold. This is also the British principle. Nevertheless, in Britain this right may legally exist in the subject, provided the latter can prove that he has a charter or grant from the crown, or has exercised the right from time immemorial, which presumes a charter or grant. But even though an individual has a right to a particular port or harbor, he holds it charged with or subject to the right of the public to make use of it. The government has also the superintending power of opening and shutting ports for the purpose of prohibiting the importation or exportation of goods. It is also a settled maxim that the duties or tolls exacted should be reasonable and moderate. In Britain, by special statutes, commissioners may be empowered to make and improve harbors, piers, etc. The principle of all such acts is that the commissioners are empowered to make the works, and, by way of paying for the expense, to levy a small toll on those who use the harbor.

In the United States, the general government has charge and control, or at least supervision, of all harbors and harbor-works; and by annual appropriations in congress, often very large, provides for the construction and maintenance of such works as needed. These appropriations are usually embodied in a bill which provides also for improvement of navigable rivers, known as the River and Harbor Bill.

HARBURG, hār'bûrch: old town and rising seaport of Hanover, province of Lüneberg, four and a half m. s. of Hamburg, on the southmost branch of the Elbe, in a marshy district at the foot of a wooded chain of hills. It is an important Prussian station for collecting customs. Sugar-refining and tanning are extensively carried on, as well as manufactures of woollens, linens, and hosiery. Its transit trade with Hamburg and the countries s. of the Elbe, which has long been considerable, has recently received favorable impetus by the construction of the Hanover and Harburg railway, and by the deepening and enlarging of its harbor, which can now accommodate 500 vessels, and admits of landing cargoes at the wharves. The passenger-traffic between H. and Hamburg is carried on by steamers and ferry-boats as well as by rail. H. is a place of holiday resort for the Hamburgers. Pop. (1880) 19,071; (1890) 35,081.

HARCOURT—HARD.

HARCOURT, *hâr'kört*, Sir WILLIAM GEORGE GRANVILLE VENABLES VERNON, LL.D.: lawyer and statesman: b. England, 1827, Oct. 14. He graduated at Trinity College, Cambridge, 1851; was called to the bar 1854, was an unsuccessful candidate for parliament 1858, became a q.c. 1866, and was elected to parliament for the city of Oxford as a liberal 1868. In the following year he was elected prof. of international law in the Univ. of Cambridge, and was subsequently a member of the royal commissions for amending the neutrality and the naturalization laws. He was solicitor-gen. 1873-4, appointed sec. of state for the home dept. 1880, presented with the freedom of the city of Glasgow 1881; retired from office with the liberals 1885, June; became chancellor of the exchequer on Gladstone's return 1886, Jan., and again retired on Lord Salisbury's accession 1886, July. He was one of the first contributors to the *Saturday Review*, wrote a series of letters on international law to the *London Times* signed *Historicus*, published numerous political pamphlets, and married for his second wife Mrs. Ives, daughter of John Lothrop Motley, 1876.

HARD, a. *hird* [Ger. *hart*; Icel. *hardr*; Goth. *hardus*; AS. *heard*, hard—allied to Gr. *kartos*, for *kratos*, strength]: not easily penetrated; firm; solid; not soft; not easy to be done or executed; laborious; fatiguing; severe; oppressive; avaricious and exacting; unkind; rough; sour, as applied to beer, etc.; unprosperous, as hard times; rigorous, as hard frost; coarse, as hard fare; in the *fine arts*, applied to a style which rejects the graces, and too rigidly adheres to the mere mechanism of art: AD. close; near; earnestly; diligently, as to read hard, to work hard; importunately; nimbly; with great force. **HARD'LY**, ad. *-lī*, scarcely; barely; rigorously; grudgingly. **HARD'NESS**, n. power of resistance in bodies (see **HARDNESS**, SCALE OF); obduracy; coarseness: austere-ness; stinginess; difficulty to be understood or executed. **HARD'ISH**, a. *-ish*, somewhat hard. **HARD'SHIP**, n. toil; severe labor; oppression; injustice. **HARD BY**, near; close at hand. **HARD-BAKE**, *-bāk*, a sweetmeat of baked sugar, sometimes with blanched almonds. **HARD DRINKER**, one who drinks intoxicants to excess. **HARD-EARNED**, *-ērnd*, earned with toil and difficulty. **HARD FAVORED**, coarse in features; of an ill-natured countenance. **HARD-FEATURED**, having strongly marked features. **HARD-FISTED**, having hard strong hands; covetous. **HARD-FOUGHT**, vigorously contested. **HARD-HANDED**, having hands rendered hard and horny with labor; coarse. **HARD-HEADED**, shrewd; intelligent. **HARD-HEARTED**, having an unfeeling heart; pitiless; cruel; merciless. **HARDHEAD**, in *OE.*, for hardihood: see under **HARDY**. **HARDIMENT**, n. in *OE.*, stoutness of heart; bravery. **HARD-LABOR**, an addition to the sentence of imprisonment on a criminal, implying bodily toil at some occupation: the labor is usually of a low kind with coarse materials, and generally, except in sickness, for 10 hours daily. **HARD-MOUTHED**, not obeying the rein; not feeling the bit; not easily governed. **HARD UP**, in *familiar language*, an inconvenient shortness of ready money; inconvenient defi-

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ciencies in ways and means; without money or resources; in extremity. **HARD-VISAGED**, having a coarse, harsh countenance. **HARDWARE**, commercial term for common goods or *ware* made of iron or other metal, as pots, pans, knives, locks, keys, anvils, grates, shovels, etc.; ironmongery. **HARD WATER**, water containing lime salts to an excess which prevents it forming a lather with soap. **HARD-WON**, obtained with difficulty or severe toil. **TO DIE HARD**, to die after a protracted struggle for life. **HARD-A-LEE**, the helm put close to the lee side of the ship. **HARD-A-PORT**, the position of the helm close to the larboard side of a ship. **HARD-A-STARBOARD**, the helm close to the starboard side of a ship. **HARD-A-WEATHER**, the position of the helm on the windward side of a ship.—**SYN.** of 'hard, a.': firm; solid; arduous; difficult; painful; distressful; cruel; vigorous; unfavorable; insensible; inflexible; unyielding; stubborn; stern; unhappy; vexatious; keen; severe; powerful; trying; vehement; unreasonable; unjust; forced; forcible; austere; harsh; stiff; constrained;—of 'hardly': scantily; unfavorably; severely; rigorously; oppressively; unwelcome; harshly;—of 'hardness': durableness; scarcity; penury; profligateness; harshness; keenness; savageness; harshness; barbarity; stiffness; parsimony.

HARDEN, v. *hār'dn* [from *hard*: AS. *heardian*]: to make or become hard, or more hard; to inure; to make unfeeling; to confirm in wickedness; to render firm or less liable to injury; to strengthen; to give to the rate or price greater fixity in its increase. **HARDENING**, n. *hār'dn-ing*: N. greater fixity in the increase of the rate or price; the giving a greater degree of hardness to. **HARDENED**, pp. a. *hār'dnd*, made hard; made unfeeling. **HARDENER**, n. *-dn-er*, one who.—**SYN.** of 'hardened': obdurate; callous; obstinate; pertinacious; contumacious; unfeeling; unsusceptible; insensible; impenetrable; hard.

HARDENBERG, *hār'den-bērĕh*, **FRIEDRICH VON** (better known by his literary pseudonym **NOVALIS**): 1772, May 2—1801, Mar. 19; b. county of Mansfeld, Prussian Saxony; son of Baron von H. His father, then director of the Saxon salt-works, was a religious man, member of the Herrnhut communion; and his mother is described as 'a pattern of noble piety and Christian mildness.' Young H. inherited the serious and reverential nature of his parents. He studied at Leipsic and Wittenberg. After a brief life, made beautiful by love, friendship, study, and literary activity, he died of consumption, in the arms of his friend, Friedrich Schlegel. His chief works are *Lehrlinge zu Saïs* (Disciples at Saïs); a Physical Romance, 'containing,' says Carlyle, 'no story or indication of a story, but only poetized philosophical speeches, and the strangest shadowy allegorical allusions;' *Heinrich von Ofterdingen*, intended, as he himself informs us, to be an 'apotheosis of poetry,' but which he was not spared to finish; and *Hymnen an die Nacht* (Hymns to the Night). 'H,' says Carlyle, 'is the most ideal of idealists.' A devout, profound, beautiful, but indefinite aspiration breathes through all the fragments that he has left.

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What he lacks is activity and vigor, and in his poetry definiteness of conception.' H. belonged to the romantic school of German literature, but took no part in the controversies of his friends. His *Sämmtliche Schriften* were published 1802 (5th ed. 1837) by Tieck and F. Schlegel, the former of whom prefixed a biography. See Carlyle's *Miscellaneous Essays*.

HARDENBERG, KARL AUGUST, Prince von: 1750, May 31—1822, Nov. 26; b. Essenroda, in Hanover: Prussian statesman. He was educated at Leipsic, Göttingen, and Metzlau, and 1776-78 travelled in Germany, France, Holland and England. On his return to Hanover, he became privy-councillor of the exchequer, and was raised to the rank of count; but a quarrel with the Prince of Wales, originating in a matter deeply affecting his honor, induced him, 1782, to quit the service of the Hanoverian government, and to go to the court of Brunswick, where the duke appointed him, 1787, pres. of the council of state. He was also commissioned by his master to convey the will of Frederick the Great, deposited in the duke's hands, to the new king, Frederick-William, who received him with marked distinction. In 1790, the markgraf of Anspach and Baireuth having requested the Prussian monarch to furnish him with a person competent to administer the affairs of his dominions, Frederick-William recommended Hardenberg. After Anspach and Baireuth were united with Prussia 1791, H. was appointed Prussian minister of state, and member of the cabinet ministry. At the commencement of the war with France, the king summoned him to his head-quarters at Frankfurt-on-the-Maine as administrator of the army. Early in 1795 he was sent to Basel, where, April 5, he concluded a peace between Prussia and the French republic. On the accession of Frederick-William III., 1797, H. was recalled to Berlin, and intrusted with the management of all foreign affairs. In 1804 he became first Prussian minister on the resignation of Haugwitz, and in this capacity endeavored to preserve neutrality between France and England. But when the French troops attacked Anspach, he changed his policy, and addressed a strong remonstrance to Marshal Duroc. After the victory of Napoleon at Austerlitz, Prussia was compelled to enter into arrangements with Napoleon, H. was deprived of his office, and Haugwitz, who was friendly to the French, returned to power. In 1806, Prussia was again led to declare war, and after the fatal battle of Jena, H. held the portfolio of foreign affairs at the desire of Emperor Alexander. In 1810 he was appointed chancellor of state. Prussia was at this period in a deplorable condition, humbled in the dust before France; nevertheless, H. was sagacious enough to perceive that the power of Napoleon was on the wane. He labored ardently to create a national feeling—a patriotic thirst for vindication. The victories of the British troops in the Spanish peninsula, and the disasters that overwhelmed Napoleon's vast army in Russia, greatly assisted his efforts, and he had the satisfaction of seeing their success. His exertions were unwearied; he

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subscribed to the peace of Paris, 1814, June; and was raised to the rank of prince by his sovereign. He accompanied the allied sovereigns to London, took part in the proceedings of the congress at Vienna, and in the treaties of Paris (1815). In 1817, he reorganized the council of state, of which he was appointed president. He was present at the congresses of Aix-la-Chapelle, Carlsbad, and Vienna, and drew up the new Prussian system of imposts. During a tour through n. Italy, he was taken ill at Pavia, and died at Genoa. The services rendered by H. to his country were great; to him mainly Prussia is indebted for improvements in her army system, with the abolition of serfdom, of the privileges of the nobles, and of a multitude of trade corporations, beside the complete reform of her educational system. The mss. of his memoirs of the period from 1801 to the peace of Tilsit, were sealed up by Frederick-William III., who deposited them in the archives of the state, and forbade them to be opened before 1850. See Von Kanke's *Denkwürdigkeiten des Fürsten von H.* (4 vols. 1877).

HARDERWIJK, *hâr'dêr-vîk*: small seaport and fishing town of the Netherlands, province of Guelderland, on the e. shore of the Zuider Zee, 31 m. e. of Amsterdam. It is fortified after an ancient fashion. It has a harbor, but fit only for fishing-boats and small trading vessels. Pop. 7,000.

HARDHACK: see **SPIÆA**.

HARDHEAD: see **MENHADEN**.

HARDICANUTE, *hâr-dî-ka-nût'*, or **HARDIKNUT**, *hâr-dê-knôt'*, or **HARTHACNUT**, King of England; ruler of Denmark, last of the Danish sovereigns of England: abt. 1018–1042 (reigned 1040–42): son of Canute the Great by Emma of Normandy, widow of Ethelred II. At the time of his father's death H. was in Denmark, and the throne of England was usurped by Harold his younger brother, Emma, the mother, however, preserving H.'s authority over Wessex. In this state affairs remained for some time, till Alfred, Emma's younger son by Ethelred, invaded the kingdom; but the invaders being annihilated by Earl Godwin, Harold's general, Emma was compelled to seek refuge at Bruges, whence she sent to H. to acquaint him with the state of affairs in England. H. being of easy and self-indulgent disposition, allowed two years to pass before taking any steps to assert his rights. Roused at last by his mother's remonstrances, he, 1039, equipped a fleet and army, and was about to sail for England to dispossess the usurper, when he was met by a deputation of English nobles, who informed him of the death of Harold, and offered him the crown. Though this action seems to have been not due to his threatening expedition, H. was mindful of his former rejection, and governed with great oppression and cruelty. H. died of apoplexy, induced by his gluttonous habits, and with him ended the Danish line in England.

HARDIHOOD, **HARDINESS**: see under **HARDY**.

HARDIN, *hâr'dîn*, **JOHN**: 1753, Oct. 1—1792, Apr.; b.

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Fauquier co., Va.: soldier. While a boy he became an expert marksman and familiar with Indian life; was a scout and ensign in Lord Dunmore's expedition 1774; was appointed lieut. in Daniel Morgan's rifle corps at the beginning of the revolutionary war; removed to Ky. 1786, accompanied Gen. Clarke on the Wabash expedition, was appointed lieut.col. of Ky. militia, commanded a detachment under Gen. Harmar in the fight with the Miami Indians 1790, led a successful expedition against the Indians 1791, was sent by Gen. Wilkinson to the Miami Indians with overtures of peace 1792, Apr., and was shot by an Indian while advancing under a flag of truce.

HARDING, *hârd'ing*, CHESTER: 1792, Sep. 1—1866, Apr. 1; b. Conway, Mass.: portrait-painter. He became a house and sign painter in Pittsburg, Penn., while a boy; began painting portraits without instruction; painted 100 crude ones in 6 months for \$25 each, studied in Philadelphia, St. Louis, and London, and opened a studio in Boston 1827. He made a second visit to England 1843, and afterward passed his winters in various U. S. cities though making Boston, and in later years Springfield, his home. As a portrait-painter no less than as a genial gentleman, he was exceedingly popular in England and the United States. Among those who sat to him were the Dukes of Sussex, Hamilton, and Norfolk, Sir Archibald Alison, Samuel Rogers, James Madison, James Monroe, John Quincy Adams, John Marshall, Charles Carroll, John C. Calhoun, Henry Clay, Daniel Webster, John Randolph, William Wirt, and—his last work—Gen. William T. Sherman.

HARDING, *hârd'ing*, STEPHEN: Cistercian monk, third abbot of the celebrated monastery of Cîteaux, one of the most remarkable religious reformers of the 12th c.: d. 1134. Of his parentage and youthful history, little is known beyond the fact that he was of a noble English family, and in early life a soldier. Under one of those religious impulses frequent in the middle ages, he undertook a pilgrimage to Rome. He subsequently entered the French monastery of St. Claude de Joux, where he was so distinguished by his strict and exemplary life, that he was chosen abbot of the monastery of Bêze, with a view to the reformation of its relaxed discipline. From this monastery he was transferred to that of Cîteaux, where, on the death of Alberic, 1109, he was elected abbot. The rigor of observance which he here enforced so deterred novices from entering the new order, that at first grave fears were entertained for its stability; but Stephen, placing his trust in his good cause, persevered; and he was rewarded, 1113, by the accession of St. Bernard and 30 other youths, whose eminent virtue gave such impulse to the institute, that in a short time the number of claimants for admission compelled him to found several new convents, especially that of Clairvaux, which, under the rule of St. Bernard, attained the very highest distinction in that age. Abbot Stephen. 1119, with St. Bernard and

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others of the brotherhood, drew up the well-known constitutions of the order, *Carta Caritatis*, which, approved by Pope Calixtus II. and Eugenius III., have, with some modifications, continued to modern times, as the rule of the Cistercian institute. See *Mabillon Annal. Benedictin.*, V. 205.

HARDINGE, *hâr'ding*, HENRY HARDINGE, Viscount; field-marshal and commander-in-chief of the British army, and gov.gen. of India: 1785, Mar. 30—1856, Sep. 24; b. Wrotham, Kent; third son of the Rev. H. H., rector of Stanhope, county of Durham. He was gazetted as ensign before he had attained his 15th year. He obtained a brigade command before his 25th year, and his foreign grade was commuted, shortly afterward, for British rank, after which he was attached to the Portuguese army, 1809–13, as deputy quartermaster-general. When Napoleon effected his return from Elba, H. joined the allied armies in Belgium, and was appointed by the Duke of Wellington commissioner at the Prussian head-quarters. He lost his hand at Ligny, and was thus unable to participate in the crowning victory of Waterloo. In 1826, he entered parliament; 1828, succeeded Lord Palmerston in the gov. of the Duke of Wellington, as sec. at war. He next filled the office of sec. of Ireland, and 1844–47 was gov.gen. of India. When the great Sikh war broke out, he hurried to the n.w. frontier of India, and served as second in command under Lord Gough in the sanguinary battles of Moodkee, Ferozeshah, and Sobraon. After the pacification of Lahore, his services were rewarded by a viscounty, the E. Indian Company granting him a pension of £5,000, and parliament voting him an annuity of £3,000, for himself and his next two successors. On the death of the Duke of Wellington 1852, H. was appointed commander-in-chief of the British army, and filled that post during the Russian war. In 1855, Oct. he was advanced to rank of field-marshal. He died at his seat, South Park, near Tunbridge, Kent.

HARDNESS, SCALE OF: quality of a body measured by its power of scratching other substances. Variations in the degree of hardness of different crystallized bodies often furnish a valuable physical sign by which one mineral may be readily distinguished from others closely resembling it. Mohs selected ten well-known minerals, each succeeding one harder than the preceding one, and thus formed the *Scale of Hardness*, generally adopted by subsequent mineralogists. Each mineral in the following table is scratched by the one that follows it, and consequently by all the subsequent ones, and the hardness of any mineral may be determined by reference to the types just selected. Thus, if a body neither scratches nor is scratched by felspar, its hardness is said to be 6; if it should scratch felspar but not quartz, its hardness is between 6 and 7—the degrees of hardness being numbered from 1 to 10. The figures on the right indicate the number of known minerals of the same or nearly the same degree of hardness as the substance opposite to which they stand:

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SCALE OF HARDNESS OF MINERALS.

1. Tale.....	23	6. Felspar (any cleavable variety).....	26
2. Compact gypsum, or rock-salt.....	90	7. Limpid quartz.....	26
3. Calcspar (any cleavable variety).....	71	8. Topaz.....	5
4. Fluor-spar.....	53	9. Sapphire, or Corundum...	1
5. Apatite.....	43	10. Diamond.....	1

The cause of the varieties of hardness in different bodies is not known. The same substance—e.g., a piece of steel—may, in different circumstances, be so soft as to take impressions from a die, or may be nearly as hard as a diamond.

HARDOCK, n. *hár'dōk* [*hoar*, and *dock*: AS. *hár*; Icel. *harr*, hoary, white]: dock with whitish leaves; probably the plant colt's-foot, *Tussilāgō farfāra*, sub.ord. *Corymbifēreæ*, ord. *Compōsitæ*, green on the upper side of its large leaves, and white like hoar-frost on the under.

HARDOUIN, *ār-dwāng'*, JEAN: 1646–1729, Sep. 3; b. Quimper, Brittany, where his father was a bookseller. H. received his first education in the schools of the Jesuits, entered that order at the age of 20, and completed his studies in Paris. On the death of Père Garnier 1683, H. was appointed librarian of the college of Louis le Grand, in which office he had leisure for the literary pursuits in which he delighted, and in which his extravagances have acquired for him a notoriety almost without parallel in the annals of literary eccentricity. Dupin places him among the very first scholars of his learned brotherhood. In a spirit of literary skepticism which it is difficult to look upon as serious, he maintained, not only that the entire body of classical literature, except in Latin, Pliny's *Natural History*, Virgil's *Georgics*, the comedies of Plautus, and Horace's *Satires*, and in Greek, Homer's *Iliad*, and Herodotus's *History*, was falsely ascribed to the authors whose various names it bears, but also that it all was the production of monks of the 13th c.! In the same skeptical spirit, he rejected as spurious all the reputed remains of ancient art, with the inscriptions and coins attributed to classical times; he extended the same skepticism to the Septuagint version of the Old Testament, and even to the Greek text of the New, the original language of which he held to have been Latin! Opinions so extravagant naturally called forth the reprobation of the authorities of the Jesuit order. He was required to retract them; and there is some reason to believe, that they were put forward by him rather from love of paradox and morbid desire of notoriety, than from any serious conviction of their probability. Nevertheless, with all this extravagance, the erudition of Père H. was beyond dispute, and most of his works are of great historical and critical value. His edition of Pliny (5 vols. 4to, Paris 1689) is a prodigy of learning and industry. Of his remaining works, the most valuable is his great *Collectio Conciliorum* (12 vols. folio), a work of great learning and utility, which has the rare advantage of possessing one of the best indexes extant; a commentary on the New Testament in folio; several volumes on the study of numismatics

HARDS—HARDY.

and Chronology; and a vast number of dissertations and essays in the *Memoires de Trevoux*. He died in the convent of his order in Paris.

HARDS, n. *hårdz* [AS. *heordas*]: the refuse or coarse part of flax.

HARDWÁR': town in India: see **HURDWAR**.

HARDWARE: see under **HARD**.

HARD-WOOD'ED TREES: forest trees of comparatively slow growth, producing compact, hard and valuable timber, as oak, ash, elm, chestnut, walnut, beech, birch, etc. From these willows, elders, poplars, etc., are distinguished as *soft-wooded trees*. Neither term is extended to firs, pines, cedars, or other coniferous trees, the wood of which is peculiar.

HARDY, a. *hár'dĩ* [F. *hardi*, daring, stout—from OF. *hardir*, to make strong It. *ardito*, daring: W. *hyrrio*, to excite, to set on as a dog]: inured to fatigue; strong in body or in health; bold; brave; strong; stubborn to excess. **HAR'DIER**, comp. *-dĩ-ér*, more inured to fatigue. **HAR'DILY**, ad. *-lĩ*, stoutly; not tenderly. **HAR'DINESS**, n. firm courage; an enduring body derived from exposure and a life of toil; excess of confidence; effrontery. **HAR'DIHOOD**, n. *-dĩ-húd*, dauntless bravery; effrontery. **FOOLHARDY**: see under **FOOL**.—**SYN.** of 'hardihood': courage; audacity; audaciousness; intrepidity; stoutness; boldness; assurance; impudence; shamelessness;—of 'hardy': stout; daring; resolute; hard; firm; stubborn; intrepid; confident; compact.

HARDY, *ár-dě'*, **ALEXANDRE**: 1560–1631; b. Paris: dramatist and actor. He began writing plays while a member of a strolling company of actors, published an edition of 41 of them 1624–28; became the dramatist of the Theatre du Marais; witnessed the early successes of Corneille (q.v.); and was author of more than 600 plays, mostly tragedies, but some comedies. His tragedy of *Marianne* is his best known composition.

HARDY, **ARTHUR SHERBURNE**, PH.D.: author: b. Andover, Mass., 1847, Aug. 13; son of Alpheus H. of Boston. He graduated at the U. S. Milit. Acad. 1869, served a year as asst. instructor of artill. tactics there and on garrison duty in Fla., resigned 1870; was prof. of civil engineering and applied mathematics in Io. College 1870–73, spent a year in study in Paris, was prof. of civil engineering in the Scientific School of Dartmouth College 1875–78, and became prof. of mathematics in the college 1878. He has published several technical works, novels, and poems, including *Elements of Quaternions* (1881), *Imaginary Quantities* (1881) *New Methods in Topographical Surveying* (1884), *Francesca of Rimini*, poem (1878), *But Yet a Woman*, novel (1883) and *The Wind of Destiny* (1886). He received the degree PH.D. from Amherst College 1873.

HARDY, **GATHORNE GATHORNE**, Viscount **CRANBROOK**: lawyer and statesman: b. Bradford, England, 1814, Oct. 1. He graduated at Oriel College, Oxford, 1836, was

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called to the bar 1840, member of parliament for Leominster 1856-65, appointed under-sec. of state for the home dept. 1858, pres. of the poor-law board 1866, July, and sec. of state for the home dept. 1867-8. He defeated Gladstone at Oxford 1865, was made sec. of state for war by Disraeli 1874, raised to the house of lords as Viscount Cranbrook 1878; was sec. of state for India 1878-80, and lord pres. of the council in Salisbury's cabinets 1885-6, and still (1889, July) holds the latter office.

HARDY, *hár'dĩ*, **THOMAS**: English novelist: b. 1840, June 2, in a Devonshire village, and articled at the age of 17 to an architect in Exeter. Settled in London, he obtained important prizes for designs and for an essay on architecture in colored brick. He qualified to become an art critic, but tried a novel, *Desperate Remedies* (1871). *Under the Greenwood Tree* (1872) and *A Pair of Blue Eyes* (1873) were well received; and *Far from the Madding Crowd* (1874) was a marked success. The latter was dramatized by H. 1879. Other works are: *The Hand of Ethelberta*, *The Return of the Native*, *The Trumpet Major*, *A Laodicean*, *Two on a Tower* (1882). H. has been said to have in some measure done for rural life what Dickens did for the town; finding his characters in the middle or lower class, the yeoman being his favorite subject. He has few equals in the art of making us see his scenes and know his characters; and commands a large fund of humor and pathos, though at times inclined to be cynical.

HARE, n. *här* [Dut. *haas*; Sw. *hare*; Icel. *heri*; AS. *hara*; Ger. *hase*, the jumper, a hare]: a common field-animal like a rabbit, but larger, having a divided upper lip and long hind-legs. **HAREBRAINED**, a. *-bränd*, unsettled and wild like the hare; giddy; heedless. **HARELIP**, n. a cleft or division in the upper lip of a child (see below). **HARELIPPED**, a. *-lĩpt*, having a harelip. **HARE-HOUND**, a harrier, which see. **MAD AS A MARCH HARE**, as mad as a hare in the rutting season, when they are wild, flighty, and strange.

HARE (*Lepus*): genus of rodent quadrupeds, of which there are many species very similar. The Linnean genus *Lepus* now forms the family *Leporidae*, which includes the genera *Lepus* and *Lagomys*, and of which a peculiar characteristic is the presence of two small incisors immediately behind the ordinary rodent incisors of the upper jaw, so that these teeth seem to be double. The molar-teeth, six on each side above and five below, are transversely grooved, being formed of two vertical plates soldered together. H. is the common name of all the species of *Leporidae* except the rabbit. All the animals of this family feed exclusively on vegetable food, chiefly herbage, though they are fond also of grain, roots, and the bark of trees. Their fore-feet have five toes; their hind-feet four; the soles are hairy. Their fur is soft; the colors mostly gray or brown. The alpine and arctic species becoming white in winter.—The **COMMON H.** (*L. timidus*) is widely distributed over Europe and northern and central Asia. The **IRISH H.** (*L. Hibernicus*), sometimes

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described as a distinct species is a variety of the Varying or Mountain H. (*L. variabilis*): its fur is of no value. The common H. is not found in Ireland. Notwithstanding the character of timidity usually ascribed to the H., it has some



Common Hare (*Lepus timidus*).

pugnacity, and shows courage in encounters with those of its own race; or with animals of nearly equal powers. It has been an object of the chase from a very early period. Xenophon, in his *Cynegeticus*, gives an enthusiastic description of the sport. Concerning the hunting of the H., see COURSING. Being evidently designed to seek safety from enemies by fleetness, the H., however well supplied with food, never becomes fat. It ordinarily lies quiet in its form, usually a slight depression in the grass, during the day, and goes in quest of food in the evening and morning. Where it is preserved by the game laws, it grows abundant and does much damage to crops. It is prolific, though not nearly so prolific as the rabbit: the female produces two to five at a birth. The young (*leverets*) are born covered with hair, and with the eyes open.—The VARYING H., MOUNTAIN H., or ALPINE H. (*L. variabilis*), which inhabits the mountains of n. and s. of Europe, and is found (the 'Blue H.') on those of Scotland and of Cumberland, is remarkable for its change of color without change of hair, on the approach of winter. Ordinarily of bluish-gray color, it becomes of a shining white, the change beginning with the feet, and extending upward, terminating with the back. It is about equal in size to the common H., but has shorter limbs and ears, and is less swift.—In the arctic regions of America the ARCTIC H. or POLAR H. (*L. glacialis*) abounds; entirely white excepting the tips of the ears, through all the year: it has long soft fur on the belly, fine thick fur on the back; is considerably larger than the common H., and spends the whole year without hibernation, even in Melville Island, and similar cold desolate regions; lichens and mosses probably affording its chief food.—North America produces also the American Varying H. (*L. Americanus*), extending from the border of the arctic regions southward in some of its

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four varieties as far as New Mexico. It is smaller than the Mountain H., but like that changes color in winter. It is very abundant on the banks of the Mackenzie river. N. America produces a number of other species of H., of which some (*L. aquaticus* and *L. palustris*) inhabit the swamps of the southeastern states.—India has a H. (*L. ruficaudatus*) very similar to the common H., other species are found in other parts of Asia, Egypt, the Cape of Good Hope, etc. The fur of the H. is used for felting for making hats and for other purposes.

HARE, in English Law: one of the wild animals called game (q.v.); specially protected by the game-laws for the benefit of the owners of land. There is no close season as to hares, which may therefore be lawfully killed by a licensed sportsman all the year round. Being game, hares can be bought only from a licensed dealer, and sold only by licensed persons. See Paterson's *Game-laws of the United Kingdom*.

HARE, *här*, AUGUSTUS JOHN CUTHBERT: author: b. Rome, Italy, 1834, Mar. 13; of English parentage. He was educated at Harrow and Univ. College, Oxford. He is a graceful and pleasing descriptive writer; and has published *Epitaphs for Country Churchyards* (1856); *Murray's Handbook for Berks, Bucks, and Oxfordshire* (1860); *a Winter at Mentone* (1861); *Walks in Rome* (1870); *Wanderings in Spain* (1872); *Memorials of a Quiet Life* (1872); *Days near Rome* (1874); *Cities of Northern and Central Italy* (1875); *Walks in London* (1877); *Life and Letters of Baroness Bunsen* (1879); *Cities of Southern Italy and Sicily* (1882); *Sketches of Holland and Scandinavia* (1885); and *Studies in Russia* (1885).

HARE, JULIUS CHARLES; 1795, Sep. 13—1855, Jan. 23; b. near Vicenza, Italy; of English parentage: theological writer. He went to England with his parents 1798; spent the winter 1804–5 at Weimar where he became acquainted with Goethe and Schiller; was educated at the Charterhouse School, London, and Trinity College, Cambridge; was asst. tutor at Trinity College 1822–32; abandoned the study of law for divinity; took priest's orders 1826, and obtained the rich family living of Hurstmonceaux in Sussex, where he acquired a library of 12,000 vols., notably large in German literature. Before settling in his parish he visited Rome, and there met the Chevalier Bunsen, who subsequently dedicated to him a portion of his *Hyppolytus and His Age*. He was vicar of Hurstmonceaux 1832–40, archdeacon of Lewes 1840–51, prebendary of Chichester 1851–53, and chaplain to the queen 1853–55. In theology he was an evangelical broad-churchman. He was author of a large number of theological and controversial works, charges to his clergy, and sermons on special topics: and published with his brother, Augustus William H., *Guesses at Truth by Two Brothers* (1827); with Thirwall, a translation of *Niebuhr's History of Rome* (1823–32); *Vindication of Niebuhr's History* (1829). He published also *The Victory of Faith* (1840); *The Mission of the Comforter* (1846), and *Vindication of Luther against his recent English Assailants* (1854).

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He also edited the *Remains of John Sterling*, his former curate (1848), which led Carlyle to publish his *Life of John Sterling* in disapproval of H.'s work.

HARE, ROBERT, M.D.: 1781, Jan. 17—1858, May 15; b. Philadelphia: scientist. He made a special study of chemistry and physics; invented the 'hydrostatic' blow-pipe 1801, for which he received the Rumford medal of the American Acad. of Arts and Sciences; perfected the calorimotor, a form of galvanic battery by which intense heat may be generated, 1816; and with this battery made the first successful application of voltaic electricity to subaqueous blasting 1831. He was appointed prof. of chemistry and natural philosophy in William and Mary College 1818, and the same year became prof. of chemistry in the medical dept. of the Univ. of Penn. He held this office till 1847, and on resigning presented his chemical and physical apparatus to the Smithsonian Institution.

HARE, WILLIAM HOBART, S.T.D.: bishop of the Prot. Episc. Church: b Princeton, N.J., 1838, May 17. He was educated in the Univ. of Penn.; ordained deacon 1859, June 19, and priest 1862, May 25; rector of St. Paul's Church, Chestnut Hill, Penn., 1861-63; in charge of St. Luke's, Philadelphia, 1863; and elected rector of the Church of the Ascension, Philadelphia, 1864. He was for several years sec. and gen. agt. of the foreign committee of the Board of Missions; elected missionary bp. of Cape Palmas, Africa, and declined 1871; elected missionary bp. of Niobrara 1872, Oct., and had his jurisdiction extended and title changed to missionary bp. of s. Dakota 1883. He has done faithful and successful work among the Indians of his diocese.



Harebell (*Campanula rotundifolia*.)

HAREBELL—HAREM.

HARE'BELL, or **BLUE'BELL** (*Campanula rotundifolia*) [named perhaps from *hare* (the animal), or from the *hairs* on its style; but prob. the name is a corruption of *heather-bell*]: common species of Bellflower (see **CAMPANULA**), growing abundantly on heaths, or in dry and hilly pastures, on waysides, etc., throughout Britain and N. America. It flowers in summer and autumn. It is common in most parts of Europe, even to the extreme north. It is everywhere a favorite from its beauty and gracefulness, and is the subject of many allusions in poetry. It is a perennial plant, with a slender stem 6-14 inches high, sometimes bearing only one flower, but generally a loose panicle of a few drooping flowers, on very slender stalks; the flowers sometimes white, but usually bright blue, bell-shaped, and fully half an inch long. The juice of the flowers yields a fine blue color, and may be used as ink.

HARELD, *hār'ēld* (*Harelda*): genus or sub-genus of ducks of the oceanic section (see **DUCK**), nearly allied to pochards, scaups, etc.; having a short, thick bill, high at the base, the laminae projecting at the edge of the mandibles, a high forehead, a thick neck, and two feathers of the middle of the tail in the males greatly elongated; while the females have the tail short and rounded.—The **LONG-TAILED DUCK**, or *H. (H. glacialis)*, inhabits arctic regions of the old and new worlds, remaining on the seas of the north as long as any water remains unfrozen,



Long-tailed Duck, Female and Male (*Harelda glacialis*).

and then betaking itself to more southern regions. It is plentiful, during winter, in the inlets of Orkney and Shetland. It is sometimes brought to the London market. Its winter migrations in America extend as far south as Texas. The male, particularly in its summer plumage, is a beautiful bird. It is about 17 inches long, without the long tail-feathers; with them, 22 or 24 inches. It is very lively and noisy; flies swiftly, and is an expert diver. It lines its nest with down, said to be equal to that of the eider, but it has not yet become an article of commerce.

HAREM, n. *hî rēm*, also **HA'RAM**, n. *-rām* [Ar. *-harama*, to forbid, to deny access: Pers. *harām*]; apartments allotted to females among Eastern families, a *seraglio*. The word

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has a different signification among different peoples. In Arabic *el-harim* refers to the holy cities of Mecca and Medina as well as the temple of Mecca (*mesjid el harim*), and in the form of *haram* it designates the sacred inclosure of the principal mosque at Cairo and at Jerusalem (*Haram esch-Scherig*). But its most general application is to that portion of a polygamist's house set apart to the exclusive occupation of his wives and their attendants, a common arrangement in the Mohammedan world, based on a passage in the Koran which specifies how many wives a good Mussulman may have, and how they shall deport themselves and be maintained. The harems of the sultan of Turkey and the shah of Persia are accepted as the most elaborate and perfect types of the system to-day; yet it prevails with more or less vigorous regulations among the Jews, Babylonians, Siamese, Greeks, Armenians, Chinese, Javanese, and Japanese. The Koran limits the number of wives that a Mussulman may have to four, excepting the sultan, who may have seven; in Japan men generally have but one wife, but princes and nobles may have as many concubines as they can maintain; and in Siam, while none but the king can have more than one wife, concubinage also is permitted to the extent of a man's means. The regulations for the government of harems and the privileges of the occupants also differ materially. At the present day the Persian H. is subject to the strictest rules; while those of Turkey and Egypt—once the most exclusive of all—have attained a laxity of form and government that permits the women, under attendance, to promenade the streets and bazaars, with only the lower part of the face covered, and that by a white veil so thin that the features may be readily seen. In Turkey and Egypt, since 1861, the ancient restraint has been lessened to a degree that has allowed American and European ladies of high official standing to visit the harems, as a mark of special favor on the part of the sultan or khedive. Harem life has been described in more or less detail by Lady Mary Montagu, Turkey, 1793; Harriet Martineau, Cairo, and Damascus, 1847; Lady Shiel, Persia, 1849; Mrs. Caroline Paine, Turkey, 1859; Mrs. S. Harvey, Turkey, 1871; two ladies of William H. Seward's family, Hiogo, 1870, and Cairo, 1871; and Mrs. Leon-owens, Bangkok, 1873; and in Ersch and Grüber's *Encyclopædie*; the *Serraglio del gransignore descritto*; the *Revue des Deux Mondes* (1852); Lempriere's *Tour to Morocco* (1793); Count de Beauvoir's *Voyage Round the World* (1870); and Dr. Häntzsche's *Zeitschrift für allgemeine Erdkunde* (1864). There is scarcely any similarity in all these accounts, because of the differences in the systems; nor is it possible to form any general opinion of the condition of the women, because there is no harmony in the types. In some harems they are described as lacking in intellect, lazy, gross, and bound to a life of comparative solitude; in others as bright, cheerful, refined, polite, fond of reading and of vocal and instrumental music. In general they are provided with luxurious surroundings, the richest apparel and the most costly jewels. They are graded according to the mode

HARE'S-EAR—HARGRAVES.

of their selection or their caste-standing. Some are wives and others concubines, and the latter may be daughters of high-caste families and nobles, or pretty slaves bought by, or more commonly presented to, the sovereign or subordinate rulers. The mother of the emperor of China selects his principal wife and his chief concubines from the noble families of the realm; and the mother of the sultan of Turkey selects his favorites from among the odalisks or female slaves. The wife of the sultan who first gives birth to an heir to the empire receives the title of *Sultana hasseky*, his mother is known as the *Sultana valide*. The two sultanas, the wives, and the favorite odalisks, have each a separate suite of apartments, attendants, and eunuchs. Bangkok, cap. of Siam, contains within its limits a double-walled city in which none but women and children live. It is a beautiful miniature city, set apart exclusively for the occupancy of the royal princesses, the wives, concubines, and relatives of the king, and their slaves and personal attendants.

HARE'S-EAR (*Bupleurum*): genus of plants of nat. ord, *Umbelliferae*, having compound umbels of yellow flowers. and generally simple leaves. The leaves of a common species, *B. rotundifolium*, embrace the stem and are roundish oval. This plant, which grows in corn-fields in some chalk districts, is the *Thorough-wax* of the old herbalists, and was in repute as a vulnerary, but has fallen into disuse. The species are numerous, and are natives of temperate climates in most parts of the world.

HARFLEUR, *âr-flêr'* (called in the middle ages *Hare-flot* and later *Harflew*): small maritime town of France, dep. of Seine-Inférieure, near the mouth of the Lézarde, on the n. bank of the Seine, about 4 m. e. of Le Havre. The chief building is a beautiful Gothic church with an elegant tower, built by the English as a memorial of the victory of Agincourt. The people are employed in fishing and rearing cattle. In former times, before the rise of Havre, H. was a flourishing town, the key to the entrance of the Seine. Its harbor now forms a meadow. It was taken by the English under Henry V. 1415, retaken by the French 1433; it was again seized by the English 1440, and ten years later was recaptured by Charles VII. of France. Off this town the Duke of Bedford took or destroyed nearly 500 French ships, 1461, Aug. 15.

HARGRAVES, *hâr'grāvz*, EDMUND HAMMOND: discoverer of gold in Australia; b. Gosport, England, 1816. He was bred to the sea, and after visiting nearly every part of the world, became a farmer and stock-raiser in Australia 1834. In 1849, he was seeking gold in California, and while working in the diggings there noticed a similarity between the geology of Cal. and Australia. He returned to Australia 1851, began searching for gold, and announced the discovery of it in the Bathurst dist. Apr. 30. Within a year nearly \$20,000,000 worth of gold was exported from Victoria and New South Wales. H. was appointed commissioner of crown lands, granted \$50,000 by the New South

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Wales council, received other private and public rewards, and returned to England 1854. He d. 1891, Oct. 1.

HARGREAVES, *hār'grēvz*, JAMES: artisan, inventor (in 1760) of the carding-machine, and the spinning-jenny, used in cotton manufacture: b. Stanhill, near Blackburn, England; d. 1778, Apr. H. was illiterate, and supported himself and family by weaving and spinning in his own house, according to the custom of the time. In 1760, he invented the carding-machine, as a substitute for the use of hand-cards; and four years later, he produced the spinning-jenny. H. had frequently tried to spin with two or three spindles at once, holding the several threads between the fingers of his left hand, but the horizontal position of the spindles frustrated his attempt. One of his children, however, is said to have upset the spinning-wheel while he was at work, and as he retained the thread in his hand, the wheel continued revolving horizontally, and the spindle vertically. The observation of these motions produced the thought, that if a number of spindles were placed upright, and side by side, many threads could be spun at once. H. now put his idea into practice, and the result was the *jenny*, at which he and his family worked, till the large amount of cotton which they spun having excited suspicion, his fellow-spinners, imbued with strong prejudices against machinery, broke into his house and destroyed his frame. He then removed to Nottingham (1768) where he erected a spinning-mill. Two years later, he took out a patent for his machine; and discovering that it was in use by manufacturers in Lancashire without his permission, brought an action for £7,000 damages. Pending the trial, he was offered by a company £3,000 for the use of the jenny, but refused; and it having been proved that he had sold some of his machines before the patent was obtained, it was thereby declared to have been invalidated, and his claim for compensation fell to the ground. Thus the inventor was but little benefited by his work. H. continued in business as a yarn manufacturer, in conjunction with a Mr. Jones, with moderate success, till his death, when his share in the mill was bought by his partner for £400. His country never gave H. any reward for the invention to which so much of its wealth is due; though one of the last acts of Sir Robert Peel as a British minister, was to bestow on the youngest and only surviving daughter of this inventor, £250 from the Royal Bounty Fund.

HARICOT, n. *hār'ĩ-kō* [F. *haricot*, small pieces of mutton partly boiled and then fried with vegetables, the beans being so called because they are served up sliced]: the French kidney-bean—the ripe beans of *Phāseōlūs vulgāris*, ord. *Legūmĩnōsæ*, and other species; a kind of ragout of meat and vegetables.

HA'RIKA'RI: see HARA-KIRI.

HÄRING, *hā'rīng*, WILHELM, better known under the name WILIBALD ALEXIS: 1797, June 23—1871, Sep. 16; b. Breslau: German novelist. He was educated in Berlin, and served as a volunteer in the campaign of 1815. He

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afterward studied law at Berlin and Breslau, but turned to a literary career. He became known first by his romance *Walladmor* (2d edit. 1823-4), written in consequence of a wager with a friend that he would produce a work which should be mistaken for one of Sir Walter Scott's. The audacious mystification was greedily devoured in Germany as a production of the Scottish novelist. It was translated into various languages, among others into English by Thomas de Quincey (London 1824), whose translation, however, departed so widely from the original, that it hardly deserved the name. H. wrote several admirable tales, but his chief power was in historical romance. His *Cabanis* (6 vols. 1832), is his best work. *Roland von Berlin* (3 vols. 1840); *Der falsche Waldemar* (3 vols. 1842); *Hans Jürgen und Hans Jochem* (2 vols. 1846); *Der Würwolf* (3 vols. 1848); and *Ruhe ist die erste Bürgerpflicht* (5 vols. 1852), are classed among the best specimens of historical romance in the German language.

HARÍRÍ, *há-rē'rē*, ABU MOHAMMED AL KASIM BEN ALI BEN MOHAMMED BEN 'OTHMAN (surnamed EL HARÍRÍ: celebrated Arabic philologist and poet: b. at Bassorah, on the Tigris, 1054-5; d. 1121 or 3; contemporary with the first Crusade. Little is known of his life and circumstances, save that he was the son of a silk-merchant (whence his name Harírí—*harir*, silk). H. wrote several valuable grammatical works, and his lyrics are of a high order. But the most famous of his writings, and indeed one of the most famous compositions of all times and countries, is his book entitled *Makamehs* (Sittings). This may best be described as a novel, or a collection of rhymed tales, loosely strung together, the centre of which is always a certain Abu Seid from Seruj, who, witty, clever, amiable, of pleasing manners, well read in sacred and profane lore, but cunning, unscrupulous, a thorough rogue in fact, turns up under all possible disguises, and in all possible places—sermonizing, poetizing, telling adventures and tales of all kinds—always amusing, and always getting money out of his audience. The brilliancy of imagination and wit displayed in these strange adventures, their striking changes, and dramatic situations, have hardly ever been equalled; but more wonderful still is the poet's power of language. The whole force of the proverbial fulness of expression, spirit, elegance, and grandeur of the Arabic idiom, H. has brought to bear on his subject. His work—of which one of the greatest Arabic authorities has said that it deserved to be written in gold—has become the armory as well as the mine of all Arabic writers since his day. Poets and historians, grammarians and lexicographers, look upon the *Makamehs* as the highest source of authority, and next to the Koran, as far at least as language is concerned. His book has been translated either entirely or partially into nearly every Eastern and European tongue, has been the prototype of innumerable imitations, the most successful of which is the one in Hebrew, *Tachkemoni*, by Jehuda Al-Charisi. The first complete edition of the text appeared Calcutta, 1809-14, 3 vols.; another by Caussin de Perceval,

HARISCHANDRA—HARK.

Paris, 1818; one much more valuable, chiefly for its commentary by Silvestre de Sacy, appeared in Paris, 1821-2 (re-edited 1847-53).

The first (Latin) translations in European tongues of single *Makamehs* were made by Golius (1656) and Schultens (1731, etc.). But the palm for translation is due to Rückert, who, with a power inferior only to that of H. himself, has so completely reproduced the spirit and form of the work in German in his *Verwandlungen des Abu Seid b. Scrug* (1826), that the *Makameh* itself has become a favorite form for similar compositions in Germany. English translations, far inferior to the German, were published 1767 by Chapellon, and 1850 by Preston. Munk and De Sacy have rendered portions into French.

HARISCHANDRA: legendary Hindu king of the solar dynasty, descendant of Ikshwâku, and prominent in the legendary history of ancient India. The earliest mention of him is in the *Aitâreya-Brâhmana* (see VEDA). He is represented there as desirous of obtaining a son, and of making a compact with the god Varuna, by which he promised to sacrifice to the god his son, if he granted him one. Varuna acceded to his prayer, and the *Aitâreya-Brâhmana* then proceeds to relate how H. delayed, from time to time, the fulfilment of his part of the compact, until at last he succeeded in finding a substitute for his son in S'unahs'epa, who was sold to him by his father for 100 cows, to be offered in sacrifice to Varuna. Ultimately, however, S'unahs'epa becomes released from his bondage through the intervention of the gods: see S'UNAHS'EPA. According to the epic poem *Mahâbhârata*, H. was a type of munificence and piety, and after death became elevated to the court of Indra; and some of the Purânas are still more explicit on his wonderful fate. Having given his whole country, his wife and son, and finally himself to Vis'wâmitra, in satisfaction of the demands made by this greedy priest for his assistance at a sacrifice, H., in consequence of such a pious act, became elevated with his subjects to the paradise of Indra; but having been insidiously misled by Nârada to boast of his merits, was cast down again. The repentance of his pride, however, arrested his descent, and he and his train paused in mid-air, where his city is popularly believed to be at times still visible.—See Wilson's translation of the *Vishnu-Purâna*.

HARIVAN'SA: Sanskrit epos of some extent, which professes to be part of the *Mahâbhârata*, but may be classed more properly with the Purânas. It is occupied chiefly with the adventures of Vishnu, in his incarnation as Krishna, but treats likewise of the creation of the world, of patriarchal and regal dynasties, and other matter contained in Purânas. Although frequently quoted by later writers, it is not a compilation to be much trusted: see PURÂNÂ.

HARK, v. or int. *hârk* [Icel. *hark*; Bohem. *hrk*, noise: Ger. *hórchen*, to listen]: used generally in the imperative, hear; listen; hearken.

HARKNESS—HARLAW.

HARKNESS, ALBERT: an American educator; b. in Mendon, Mass., 1822, Oct. 6; was graduated at Brown University, 1842; taught in the Providence High School, 1842-53; studied in Germany, 1853-55; and became professor of Greek at Brown University in the latter year. He is the author of many well-known text-books in Latin and Greek, including *Harkness-Arnold; First Latin Book; First Greek Book; Cæsar's Gallic War with Notes; Cicero's Orations with Notes and Dictionary*, etc.

HARKNESS, WILLIAM: an American astronomer; b. 1837; served as surgeon in the U. S. army during the civil war; entered the navy, attained the rank of rear-admiral; and was retired, 1899. He was attached to the U. S. Naval Observatory; became professor of mathematics in the navy; attached to the U. S. Hydrographic office, 1867; discovered the theory of the focal curve of achromatic telescopes; designed most of the large instruments for the naval observatory; and was its astronomical director, 1894-99.

HARLAN, *hâr'lan*, JOHN MARSHALL: lawyer: b. Boyle co., Ky., 1833, June 1. He graduated at Centre College 1850, and the law dept. of Transylvania Univ. 1852; was adjt.gen. of Ky. 1851, and became judge of Franklin co., Ky., 1853. He served two years in the civil war in the Union army (col. 10th Ky. inf.), was attor.gen. of Ky. 1863-67, defeated as republican candidate for gov. 1871, 75, member of the La. commission 1877, and succeeded David Davis as assoc. justice of the U. S. supreme court 1877, Nov. 29.

HARLAND, HENRY (pen name SIDNEY LUSKA): an American author; b. in St. Petersburg, Russia, 1861; was educated at the College of the City of New York and at Harvard University; employed in the office of the surrogate of New York 1883-86; and afterward removed to London. His publications include *Mrs. Peixada; The Land of Love; As it was Written; Mademoiselle Miss; Grandison Mather; Comedies and Errors; Grey Roses; My Uncle Florimond; The Yoke of the Thorah*, etc.

HAR'LAND, MARION: see TERHUNE, MARY VIRGINIA.

HARLAW, *hâr'law*, BATTLE OF: between Scottish Highlanders and Lowlanders, 1411, July 24. From the beginning of the 12th c. to the beginning of the 14th c., the power and territory of the Celtic tribes in Scotland steadily gave way before the encroachments of the Anglo-Normans of the Lowlands. But during the long wars of the succession, and the feeble reigns of the first and second Stuart kings, the Celtic people regained so much of what they had lost, that, strengthened by alliances with England, they began to be regarded with alarm by the Scottish government. A trial of strength seemed inevitable, and it was precipitated by a dispute as to the right of succession to the earldom of Ross, between Donald Lord of the Isles and a brother of the Regent Albany. The island chief, gathering a host of 10,000 Islesmen and Highlanders, marched rapidly southward, leaving havoc and desolation

HARLE—HARLEQUIN.

behind him: The rich city of Aberdeen, and the whole country n. of the Tay, seemed within his grasp, when he was encountered by a vastly inferior force of the chivalry and men-at-arms of Mar, Garioch, Buchan, Angus, and Mearns, under Alexander Stewart, Earl of Mar, one of the best captains of the day, familiar in his youth with the usages of Highland warfare, and later distinguished in the wars of France and Flanders. The armies met on the Eve of St. James 1411, at Harlaw, a low table-land on the banks of the Ury, about 18 m. n.w. of Aberdeen. The battle was long and bloody, but the Highlanders were at last driven back. They left two chiefs, Maclean and Macintosh, and more than 900 dead upon the field. The loss on the other side was computed at 500 or 600, among whom were the Constable of Dundee, hereditary bearer of the royal banner, Sir Alexander Irvine of Drum, and other knights, many of the best esquires of Angus and Mearns, nearly all the gentry of Buchan, and Robert Davidson, the provost, and many of the burghers of Aberdeen.

HARLE, *v. hàrl*: in *Scot.*, to trail or drag along or over with force; to rough-cast a wall, as with a mixture of lime and gravel. **HARLING**, *imp.* **HARLED**, *pp. hàrld*: see **HAURL**.

HAR'LEIAN COLLECTION: see **HARLEY, ROBERT**.

HARLEM, *hâr'lêm*: former town of Westchester co., N. Y., now incorporated with New York city. The name is now applied to the territory n. of 106th St. and between 8th ave. and the East river. The extension of the elevated railroad system has caused it to become thickly settled. It has several handsome boulevards, and metropolitan fire, police, water, and sewage service.

HAR'LEM: city in Holland: see **HAARLAEM**.

HAR'LEM RIVER: tidal channel between Long Island Sound and the Hudson river, beginning at the East river opposite Randall's Island, extending n.w. to a short distance above the point where it is crossed by McComb's Dam, when it curves to the n. till it joins Spuyten Duyvil Creek which connects it with the Hudson river; forming a part of the e. boundary of Manhattan Island and, with the creek, separating the island from the main land; length 7 m. It is crossed at Harlem by 6 bridges, is navigable for large vessels the greater part of its extent, and affords a picturesque sail. This entire channel was opened as a ship canal, 1895, June. Its depth at low water is 9 feet, and at high, 15.

HARLEQUIN, *n. hâr'lê-kwîn* [*F. arlequin*—from *It. arlecchino*; *OF. hierlekîn*, a troop of demons haunting a lonely place, a demon: also said to be derived from *Scand. helleguin* or *helleguina*, the Hell-queen, or the famous *Helia* or *Hell*, goddess of death]: in a *pantomime*, the performer who is dressed in a many-colored tight-fitting suit, and who carries a talismanic wand. **HAR'LEQUINADE**, *n. -kwîn-âd*, a piece in which harlequin acts the conspicuous part. **HARLEQUIN, CLOWN, PANTALON, and COLUMBINE**, the four chief personages in the modern pantomime. This

HARLEQUIN-DUCK.

species of play is divided into two parts—one, the introduction, or opening; the other, the harlequinade. Both divisions, particularly the opening, were wont to be acted in dumb-show, and at one time the same performers used to play all through the piece; the idea of which was a story of love, interspersed with grotesque elements. At a certain stage of the plot, a fairy was employed to transform the tyrant and his abettor into Clown and Pantaloon, and the lovers into Harlequin and Columbine; and the motley quartette were sent away for a period on a tour or chase, the termination of which took place at the will of the good fairy. During this chase, the object of the Clown ought to be the capture of Columbine; but Harlequin, who is provided by the fairy with a magic sword, the loss of which renders him helpless, is usually able to thwart all his designs, and protect his mistress. A symbolical meaning may, no doubt, be found at the bottom of such representations, at least, in many of their parts; but as, in their modern form, they are a jumble of fragments from older scenic entertainments, anything like a consistent scheme is not to be looked for. As to the characters, the prototypes of the Clown and Harlequin may be traced back to the Roman *Atellane* (q. v.). The *arlechino* (Fr. *arlequin*) of the early Italian dramatic entertainments was a satirist and practical jester of similar type to the modern English Clown. As civilization advanced, the character gradually became more refined, then was confined to the ballet, and at last disappeared from the regular stage. He still figures in the improvised plays of the Italians. In English pantomimes, the Clown is the prime mover in the 'comic business,' and there are often two, the 'talking' Clown, and the 'tumbling' Clown, who acts chiefly as an acrobat. The Clown is also a never-failing adjunct in circus entertainments. Pantaloon is usually represented as a very senile old man, the butt of the Clown, and the aider and abettor of that person's comic villainy. This personage is knocked about and well cuffed by every one; he generally, therefore, wears a stuffed dress, in order to protect himself from accident. Columbine, lover of Harlequin, has nothing to do all through the piece but to dress well, look pretty, and dance her best: the character is usually represented by a well-trained dancer. Harlequin wears a tight dress sewn over with spangles.

The persons engaged in these occupations require to be trained to it from infancy. To make a good clown or H. (in the continental and original sense of the word) requires genius; and though the rôle may seem the lowest in the dramatic art, lasting European reputations have been obtained in it, as by the English clown, Grimaldi, and the famous French Carlin (1713-83): See PANTOMIME.

HARLEQUIN DUCK, *hâr'lê-kuïn dŭk* (*Clangula histriónica*): species of Garrot (q. v.), which receives its name from its variegated markings, chiefly white, gray, and black. Its whole length is abt. 17 inches. It inhabits the

HARLEY.

arctic regions, where it is found on the sea, and on lakes



Harlequin Duck, Male and Female (*Clangula histrionica*).

and rivers. In America, it is plentiful in winter as far s. as the Bay of Fundy.

HARLEY, *hâr'li*, ROBERT, Earl of Oxford and Mortimer: 1661, Dec. 5—1724, May 21; b. London; son of Sir Edward H., active partisan of the parliament during the civil wars. descended from an illustrious Herefordshire family. H. entered parliament, being returned for the Cornish borough of Tregony, as a whig; but soon began to vote and speak against his party; and policy and ambition rather than choice, made him an anti-dissenter and ardent tory. He shortly acquired great reputation for his knowledge of parliamentary law and practice, a study not much pursued in those days; and in the parliament, which met under the chieftainship of Rochester and Godolphin, 1701, Feb., he was, by a large majority, elected speaker. H. retained this post, twice re-elected, till 1704, when he became sec. of state. The conviction of H.'s sec. for treasonable correspondence with France caused his master, though entirely exculpated, to resign his office 1708, Feb. H. remained out of power two years, long enough with the assistance of Mrs. Masham, to completely undermine the power of the whigs. In 1710, Aug., Godolphin was dismissed, and H. was appointed to his post of chancellor of the exchequer, and brought back the tories. An event in 1711, raised H. to high popularity. A French priest and spy, who assumed the title Marquis de Guischart, being brought before the council Mar. 8, on the charge of treasonable correspondence with France, rushed upon H. and stabbed him with a penknife. His life was said to have been in danger, and recovering, he was congratulated by parliament on his escape, created Earl of Oxford and Mortimer, decorated with the Garter, and in the following May appointed lord-high treasurer of

HARLINGEN—HARM.

Great Britain. From this point, H.'s course was downward: he was not a man of business, and was destitute of that indispensable quality for a premier—decision of character. Macaulay had but a mean opinion of H. as a statesman, though he gives him, as a man, a higher character than could be given to any other politician of the time. The principal act of H.'s administration was the treaty of Utrecht: though England might have obtained better terms, she had nothing to gain from continuance of the war; and the peace was, at all events, popular. H. ceased to pay court to Lady Masham, and the unscrupulous Bolingbroke, succeeded in getting him dismissed 1714, July 27. Lord Oxford was dismissed on Tuesday—Bolingbroke became premier—and Queen Anne died on Sunday. George I. was proclaimed, and Bolingbroke fled to France, but Oxford remained to meet his fate. He was sent to the Tower, and after two years' imprisonment, brought to trial: the two houses quarrelled as to the mode of procedure, and the commons having in anger refused to take any part in the trial, he was acquitted by the peers, and released. He spent the remainder of his life in retirement—the friend of scholars and men of letters—the founder of a collection of books, and one of ancient pamphlets and MSS. which perpetuates his name. The collection, 8,000 MSS. and 400,000 pamphlets, was bought by govt. 1723 for £10,000. From these papers several vols. of selections have been published under the title *Harleian Miscellany*.

HARLINGEN, or **HAARLINGEN**, *hâr'ling-én* (Frisian *Harns*): flourishing seaport of the Netherlands, province of Friesland, on the Zuider Zee, about 65 m. n.n.e. of Amsterdam. It is protected from the inroads of the sea by a strong and high dyke. Principal buildings are the town-house and the Great Church. H. has a grammar and a drawing-school. There is large shipping trade. Other industries are refining salt, tanning, soap-boiling, ship-building, making sail-cloth and brick. Timber, grain and hemp are brought from Norway, and immense quantities of butter, cheese, flax, etc., are sent to England, from which in return are imported coal, iron, cotton, yarns, manufactured goods, etc. Pop. (1879) 10,735.

HARLOT, n. *hâr'lôt* [W. *herlawd*, a youth; *herlodes*, a damsel—the term originally meant simply a young man: comp. Gael. *ur-laoch*, a young hero or warrior]: a strumpet; a woman of loose character; *figuratively in Scrip.*, one who forsakes the true God and worships idols. **HARLOTRY**, n. *-rî*, lewdness; in *OE.*, a name of contempt for a woman. **TO PLAY THE HARLOT**, to commit lewdness or fornication. *Note.*—In its comparatively modern sense **HARLOT** is probably nothing more than an easy corruption of *whorelet*, a little whore, the spelling *harlot* having been adopted from its similarity in sound to the *OE.* word: see Dr. C. Mackay.

HARM, n. *hârm* [AS. *hearm*, evil, harm: Icel. *harmr*, grief: Sw. and Ger. *harm*, anger, affliction: comp. Gael. *arm*, a weapon]: hurt or injury with an arm or weapon;

HARMALIN—HARMODIUS AND ARISTOGEITON.

injury; hurt; damage; moral wrong; mischief: V. to hurt; to injure; to damage. HARM'ING, imp. HARMED, pp. *hármd*. HARM'FUL, a. -*fúl*, injurious. HARM'FULLY, ad. -*lĩ*. HARM'FULNESS, n. HARM'LESS, a. -*lēs*, void of harm; inoffensive. HARM'LESSLY, ad. -*lĩ*. HARM'LESSNESS, n. innocence; freedom from tendency to injure or hurt.—SYN. of 'harm, n.': crime; detriment; injustice; wrong; wickedness; prejudice; evil; loss; misfortune;—of 'harmless': unoffending; innocuous; innocent; unhurt; uninjured; unharmed.

HARMALIN: see HARMIN.

HARMAR, *hâr'mér*, JOSIAH: 1753–1813, Aug. 20; b. Philadelphia: soldier. He received a Quaker-school education, entered the continental army as capt. of the 1st Penn. regt. 1776, was promoted lieut.col. 1777, served with Washington 1778–80 and in the south with Greene 1781–2, was brevetted col. of the 1st U. S. regt. 1783, took the ratification of the definitive treaty of peace to Paris 1784, became lieut.col. of inf. under the confederation 1784, Aug., was brevetted brig.gen. by resolution of congress 1787, was gen.-in chief of the army 1789–1792, and was adj.gen. of Penn. 1793–99. He was a noted Indian fighter.

HARMATTAN, n. *hâr-măt'tân* [an Arabic word]: the hot dry wind of Senegambia and Guinea, blowing from the great desert of Africa toward the Atlantic in Dec., Jan., and Feb. It is generally accompanied by a fog, through which the sun appears of pale-red color. It has a hurtful effect on vegetation, and unpleasantly affects the human body, drying up the eyes, nostrils, and mouth, and even causing the skin to peel off. It, however, has the good effect of checking epidemics, and curing dysentery, fevers, and cutaneous diseases. The H. is the same as the sirocco (q.v.) of Italy.

HARMIN, or HARMINE, n. *hâr'mîn*, AND HARMALIN, or HARMALINE, n. *hâr'mâ-lîn* [Sp. *harma*, wild Syrian rue]: two alkaloids, the vegetable bases which constitute the active virtues of Syrian rue. They occur in the husk of the seeds of the *Peganum harmala*, or Syrian rue, which grows abundantly in the steppes of s. Russia, and whose seeds are used in dyeing silk, to which they impart various shades of red. *Harmalin* ($C_{13}H_{14}N_2O$), when pure crystallizes in colorless prisms; but its salts are yellow, and oxidizing agents transform it into a red coloring matter, which combines with acids forming salts, which constitute the basis of the *Harmala Red* of commerce. *Harmin* ($C_{13}H_{12}N_2O$) may be obtained by oxidation from harmalin. It crystallizes in delicate prisms, and forms colorless salts.

The *Peganum harmala* belongs to the nat. ord. *Zygophyllaceæ*. It is a half shrubby plant, with smooth linear pinnate or bipinnate leaves, and solitary white flowers. The seeds are said to possess narcotic properties, and Emperor Solyman is reported to have kept himself intoxicated by eating them. They are used by the Turks as a spice.

HARMODIUS, *hâr-mō'dĩ-ūs*, AND ARISTOGEITON, *âr-ĩs-tō-jĩ-tõn*; two Athenians strongly attached to each

HARMONIA—HARMONIC.

OLIVER, who murdered (B.C. 514) Hipparchus, younger brother of the 'tyrant' Hippias, for an insult offered by him to the sister of Harmodius. They meant to kill Hippias also, with the view to the overthrow of the Pisis-tratidæ, but in this they failed. H. was cut down by the body-guard immediately after the murder of Hipparchus. A. fled, but was afterward taken and put to death. As Hippias was banished from Athens a few years later, H. and A. naturally came to be regarded as patriotic martyrs; and in this light they appear in all subsequent Greek history. They received divine honors from the Athenians, and had statutes raised to their memory. A very beautiful drinking-song on this subject has come down to us in the Greek Scholia.

HARMONIA, a. *hâr-mō'nî-ă* [Gr. *harmōniă*, a joining together—from *harmōzō*, I fit together]: in *anat.*, a form of articulation which does not allow motion to the bones.

HARMONIA, *hâr-mō'nî-a*: in ancient mythology, wife of Cadmus. She is said, in various modifications of the Theban legends, to have been the daughter of Ares and Aphrodite, of Zeus and Electra, and of Mars and Venus; and sister of Iasion, founder of the mystic rites annually celebrated on the island of Samothrace. On the occasion of her marriage all the gods excepting Juno were present, and among her presents were a rich veil and a splendid necklace that had been made by Vulcan. This necklace, like the moonstone in Wilkie Collins's mysterious novel, brought ill-luck to all its owners. H. and her husband were changed into snakes and in that form translated to the Elysian Fields, while the fated necklace passing from one to another generation was the cause of constant evil, Polynices bribed Eriphyle with it to betray her husband Amphiaras, and the death of Eriphyle's son, Alcmaeon, was ascribed to it. It was dedicated to Athena in her temple at Delphi, whence the tyrant Phayllus stole it for his mistress (B.C. 352), who was burned to death in her own house that had been fired by her mad son.

HARMONIC, a. *hâr-mōn'îk*, or **HARMON'ICAL**, a. *-î-kăl* [L. *harmōnicus*, harmonious: F. *harmonie*, harmony—from L. or Gr. *harmōniă*, a due proportion, as of sounds, harmony—from Gr. *harmōzō*, I fit together]: relating to harmony or music; musical; consonant; applied to the sounds which accompany the simple tone of any chord or string. **HARMON'ICALLY**, ad. *-lî*. **HARMON'ICS**, n. plu. *-îks*, the doctrine or science of musical sounds; the accompanying secondary notes which emerge directly a note is produced on an instrument, as a note struck on a piano (see below). **HARMO'NIOUS**, a. *-mō'nî-ûs*, sweet to the ear; living in peace and friendship; being in concord; adapted to each other. symmetrical; symphonious; musical. **HARMO'NIOUSLY**, ad. *-lî*. **HARMO'NIOUSNESS**, n. **HARMON'ICON**, n. *-mōn'î-kôn*, a musical instrument contrived to imitate the effect of a military band, including the triangle, cymbal, and drum. **HARMONIZE**, v. *hâr'mō-nîz*, to bring together and reconcile; to adjust in harmony; to agree. **HARMONIZING**, imp.

HARMONICA.

HAR'MONIZED, pp. *-nīzd*. **HAR'MONIZER**, n. *-zēr*, one who. **HAR'MONIST**, n. a musical composer. **HAR'MONOM'ETER**, n. *-nōm'ē-tēr* [Gr. *metron*, a measure]: an instrument for measuring the harmonic relations of sounds. **HAR'MONY**, n. [F. *harmonie*]: *-mō-nī*, an agreeable combination of sounds heard at the same time; the just adaptation of parts to each other; concord or agreement; correspondence of sentiment or feeling (see **HARMONY**, in *Music*). **HARMONIC TRIAD**, in *music*, the chord of a note with its third and perfect fifth; the common chord. **HARMONIC PROGRESSION**, series of numbers in harmonic proportion (q.v.).

HARMONICA [Gr. *harmonīca*]: musical instrument invented by Benjamin Franklin, the sound of which was produced from glass in the shape of a cup, or half globe, which was put into a revolving motion on its centre, while the rim was touched by the finger. Franklin, in a letter 1762, July 13, to Padre Beccaria, at Turin, mentions the history of his invention. It had already been known that beautiful sounds could be produced by friction of the finger on the rim of an ordinary drinking-glass. An Irishman, named Puckeridge, was the first who hit on the idea of playing airs on a row of glasses, which he tuned by putting water into each. He performed publicly in London; but he and his glasses were burned in the great fire in London 1750. When Franklin finished his invention, he found an excellent performer in a Miss Davis, to whom he made a present of his H., and who 1765, performed on the H. in Paris, Vienna, and all the large cities of Germany with great effect. This fascinating instrument found many admirers, but none of them ever succeeded in improving it. The compass of its notes was from C to F, including all the chromatic semitones. The producing of the sound by the points of the fingers produced such an effect on the nerves of the performer as in some instances to cause fainting fits. All attempts to make the H., through means of keys, easier for amateurs, ended in failure, as no substance was found to act as a substitute for the human finger. The H. gave rise to a host of similar instruments by Chladini, Kaufmann, Rieffelsen, and others, which were not eminently successful. Other instruments of no merit or importance took the same name, but had no resemblance to the original. The H. was somewhat similar to the instrument now known as musical glasses.

HARMONICA, CHEMICAL: term applied to the musical note evolved when a long dry tube, open at both ends, is held over a jet of burning hydrogen. A rapid current is produced through the tube, which occasions a flickering, and is attended by a series of small explosions that succeed each other so rapidly, and at such regular intervals, as to give rise to a musical note, whose pitch and quality vary with the length, thickness, and diameter of the tube. The explanation of this phenomenon, which was discovered by Lampadius, but long remained unaccounted for, is due to Faraday. A curious modification of the experiment is

HARMONICI—HARMONICS.

given by Böttger, 94th vol. of Poggendorff's *Annalen*, 1855.

HARMONICI, n. *hâr-môn'î-sî* [Gr. *harmonikos*, harmonical]: the followers of the Pythagorean system of music as opposed to that taught by Aristoxenus; called also Musici. The Aristoxenians viewed music as an art governed by an appeal to the ear; the Pythagoreans as a science founded on physical laws.

HARMON'IC PROPOR'TION: that relation of three numbers when the first is to the third, as the difference between the first and second is to the difference between the second and third as in the three numbers 2, 3, 6; otherwise harmonic proportion is that which subsists between the reciprocals of numbers which are in arithmetical proportion. Thus, 3, 5, 7, etc., being in arithmetical proportion, $\frac{1}{3}$, $\frac{1}{5}$, $\frac{1}{7}$, etc., are in harmonic proportion. In geometry,

$$\overline{\text{A} \qquad \text{C} \quad \text{B} \quad \text{D}}$$

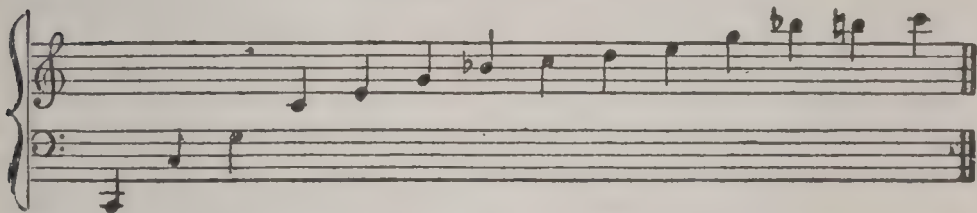
a line AB is said to be harmonically divided when two points are taken, one in the line and the other in the line produced, as C, and D; such that $AC : CB :: AD : DB$. When the line is thus divided, AD, CD, and BD, are in harmonic proportion.

HARMON'ICS: The accessory, or concomitant sounds produced by a fundamental musical sound, either naturally, or by a division into aliquot parts. Every musical sound, though to the ordinary ear it comes as only one sound, will, on close examination, be perceived to consist of a principal or fundamental sound, accompanied by other feeble acute sounds in perfect harmony (see **HARMONY**). The existence of such accompanying sounds, called harmonics, can be best demonstrated by the vibrations of a string stretched between two points, or bridges. Eight ft. is a good length for such a string, though 16 ft., or even 32, would be better, from bridge to bridge. A scale or measure, accurately dividing the length of the string into aliquot parts, from $\frac{1}{2}$ up to $\frac{1}{16}$, is placed alongside of it. When a violin-bow is drawn across the string, it vibrates from end to end, and gives out its fundamental sound. Divide the string into halves by slightly touching it with the finger at the mark $\frac{1}{2}$ on the scale, or better, with a stretched thread lightly pressed upon it at that point; when sounded, it will be found to vibrate in two halves, each part vibrating as fast again as the entire string, and producing a sound an octave above the fundamental one, or as 2 to 1. Divide in the same manner at $\frac{1}{3}$, and the sound produced is the fifth above the last octave, being in the proportion of 3 to 2. It is not necessary to touch the string on more than one of the points of the division, for the long side of the string always divides of itself naturally, which can be seen by the eye. The parts where the string seems at rest, are called the nodal points. Divide as before at $\frac{1}{4}$, and the second octave above the lowest sound is heard, being to the first octave as 4 to 2. At $\frac{1}{4}$ the major third above the last octave

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is found, being as 5 to 4. At $\frac{1}{6}$ the octave of the former fifth, 3 to 2. At $\frac{1}{7}$ we find the true flat seventh, or 7 to 4; at $\frac{1}{8}$, the octave of the lowest; at $\frac{1}{9}$ the major second, or 9 to 8; and above this, at $\frac{1}{10}$, $\frac{1}{12}$, $\frac{1}{14}$, we find the octaves of the major third, the fifth, and the flat seventh; while at $\frac{1}{15}$ we obtain the sharp seventh, or 15 to 8; and at $\frac{1}{16}$ another octave of the fundamental sound. The following is the order in which the harmonics arise, assuming that the string, at its full length, sounds the note C on the second ledger line below the bass staff, or lowest string on a violoncello.

NOTES PRODUCED.



DIVISIONS OF STRING.

1	2	3	4	5	6	7	8	9	10	12	14	15	16
C	C	G	C	E	G	B \flat	C	D	E	G	B \flat	B \flat	C

From these harmonics, the true ratios of all the intervals of the diatonic scale, in relation to a fundamental key-note, are found, and in the most perfect tune; they are as follows:

Degrees of the scale,	I.	II.	III.	IV.	V.	VI.	VII.	VIII.
Notes of the scale,	C	D	E	F	G	A	B	C
Ratios to key-note	1	$\frac{9}{8}$	$\frac{5}{4}$	$\frac{4}{3}$	$\frac{3}{2}$	$\frac{5}{3}$	$\frac{15}{8}$	$\frac{2}{1}$

Assuming 24 as the number of vibrations of C in any given time, the other notes of the scale may be expressed in whole numbers thus :

Notes of the scale,	C	D	E	F	G	A	B	C
In whole numbers,	24	27	30	32	36	40	45	48

In the artificial division of the octave into a chromatic scale of 12 equal semitones, all the intervals must necessarily be made somewhat imperfect, which is called temperament (see TEMPERAMENT). This must be especially attended to in keyed instruments. Singers, and performers on stringed instruments, are guided by their ear, being free from the fetters of fixed notes, to which keyed instruments are necessarily subject. Even in the natural diatonic scales as produced by the harmonics, it will be found, on analysis, that a certain degree of temperament required to make the fifths within the octave equal. For example, the fifths from F to C, and from E to B, will be found to be accurately the same as the fifth from C to G—viz., $\frac{3}{2}$ which is easily ascertained by reducing their respective numbers to the lowest fraction; thus, F to C is $\frac{40}{32} = \text{to } \frac{5}{4}$; from E to B is $\frac{45}{30} = \frac{3}{2}$; while from D to A, which in practical music must also be treated as a fifth, will be found to be too flat; thus, D to A is $\frac{27}{18} = \frac{3}{2}$, which cannot be reduced to $\frac{3}{2}$; but when both are brought to the fractions of a common denominator, which is done by multiplying $\frac{40}{32}$ by 2 = $\frac{80}{64}$, and $\frac{3}{2}$ by 27 = $\frac{81}{64}$, it is shown that D to A, in the scale of nature, is flatter

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than a perfect fifth, in the proportion of 81 to 80 so that without temperament A cannot at the same time be a perfect major sixth to C, as a key-note, and also a perfect fifth to D, the true major second of C.

HARMONIUM: musical wind instrument, keyed like a piano, and producing sounds somewhat like those of an organ, but entirely by means of vibrating metallic tongues. It is a modern invention, for which there are many claimants. The principle by which the sounds of the H. are produced, is called the *free vibrating reed*, supposed to have been a modern discovery, but now ascertained to have been known in China long before it was ever heard of in Europe. Its construction is as follows: A narrow rectangular slit being made in a piece of brass-plate of a quarter of an inch in thickness, a thin elastic spring of the same metal, and of nearly the exact breadth of the slit, is fixed at one end by two small rivets to the surface of the plate, close to one end of the slit, being so adjusted as to fill the area of the slit, and that when pressed into it at the free end, it may pass inward without touching the end or the sides of the slit, and when left to itself it shall return back to its position of covering the slit. The spring at the free end is permanently bent a very little outward. When a current of air is forced through the slit, the spring is put into vibration, and produces a continuous musical sound, acute or grave, according to the rapidity or slowness of the vibrations. This kind of reed is termed 'free,' in contradistinction to the reed of the organ-pipe, the spring or tongue of which entirely covers an oblong slit, in the side of a brass tube closed at one end, and vibrates against the cheeks or outside of the slit, instead of within it. After many attempts, in various countries, to construct a keyed instrument of really a useful kind with the free reed, Debain, of Paris, produced his invention of the H., which became more or less the model of all that have followed. The H. occupies comparatively little space, being only about 3 ft. 3 inches high, and 3 ft. 9 inches broad; the depth being according to the number of the stops. It has a compass of five octaves of keys from C to C, the key-board being placed on the top, immediately below the lid. Under the key-board is the wind box, on which are valves for each key; while below the valves, and inside of the wind-box, the different rows of reeds are placed. The sizes of the reeds differ, according to pitch, from about $3\frac{1}{2}$ inches long to $\frac{1}{2}$ inch; and the quality of sound is affected and modified by the breadth of the vibrating part of the reed, and shape of the aperture in the wind-box covered by the valve. The pressure of wind is from a bellows with two feeders, which the player moves alternately with his feet (or which an assistant may move by a handle), filling a magazine similar to the bellows of a small organ. When a key is pressed down, the valve below it opens, and the wind, which has access from the bellows to the wind-box, rushes through the slit of the reed, and produces a sound which continues while the valve is kept open. It is a peculiarity of the free

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reed that an increase or a diminution of the pressure of wind does not alter the pitch of the sound, but merely increases or diminishes its volume. Advantage is taken of this peculiarity to effect in the H. an expressive swell and diminution in the sound, by gradually increasing or diminishing the pressure of the wind. The vibrations of the spring being like those of a pendulum, isochronous, remain fixed in rapidity or slowness, according to the length and elasticity of the vibrating slip of metal, and thus regulate the pitch of the sound without reference to the pressure of wind. For the deep bass-notes the springs are heavily loaded at the loose end, to make them vibrate slowly; while in the higher notes they are made thinner at that end. Harmoniums are made of various sizes, and from one row of reeds (or vibrators, as they are now called) to four or more rows; each row is divided near the middle, between an E and F; and each half has its separate draw-stop. Lately, a 'knee' movement, erroneously called a pedal, for producing a small degree of crescendo on either bass or treble, has been attached. Some harmoniums are made with two rows of keys, thus affording a greater variety in playing solo with an accompaniment; and for more skilful performers, pedal-keys for the feet, like those of a church organ, are added. The manufacture of the H. in Paris has, of late years, increased almost incredibly. The best known makers are the Alexandres and Mustel in France, and Mr. Bauer in England. The *Seraphine* was a similar but much inferior instrument.—The *American Organ*, introduced 1861 by Mason and Hamlin, is a kind of H. which acts by wind exhaustion or suction; and instead of force bellows, works by exhaustion bellows. Its tone is softer, and its timbre less reedy; it is also easier to play. But the true H. is capable of higher treatment. The *Percussion action* for the H. consists of a small hammer like that of a pianoforte, which strikes a blow on the vibrator the moment the key is pressed down, and sets it instantly into vibration, thus assisting the action of the wind. Harmoniums may now be had of almost every size and quality, at prices from a few dollars to many hundreds. Valuable chiefly for accompanying psalmody, they suitably take the place of organs in temporary places of public worship, or for less opulent congregations, though they necessarily lack the pleasing and useful variety as also the majesty and nobleness of tone which makes the organ unrivalled among instruments of music. For domestic use, they are not likely to supersede the pianoforte, but possessing the important advantage of not going out of tune through humidity of atmosphere, they are available where pianos cannot properly be kept.

HAR'MONY, in Music: understood to be the union of sounds which individually appear different, but when heard together form a collective sound called a chord (see CHORD); or explained as the melting or flowing together of several sounds into, as it were, one sound; in consequence of or arising from the consonant nature of their relative propor-

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tions to a fundamental sound. All musical compositions can be reduced to a fundamental H. of successive chords, which, in their progression, are regulated by the rules of the theory of music. Dissonant, as well as consonant, chords are included as forming H., as they are a union of several sounds that have but one fundamental sound, or bass note, in common. The H. of chords can be either close or spread, which the position or distance of the sounds or intervals from one to another, forming the chords, determines. Close H. is when the sounds composing each chord are placed so near to each other, that no sound belonging to the chord could again be interposed between any of those already present. Spread H. is when the sounds of a chord are placed at a greater distance from each other, so that some of them might be again interposed between the parts of those sounds already present. Close H. generally takes place in music in which there exists a near relationship among the different parts, as in compositions for four male voices, in which case it becomes unavoidable, and spread H. impossible. In choruses for mixed voices, and in instrumental compositions, spread H. is more used, and the intervals of the chords are frequently inverted, which produces what is called double Counterpoint (q. v). In the inversion of intervals, great care must be taken to avoid a consecutive progression of such intervals as become fifths by inversion; also that an alto part should never approach nearer a bass part than the distance of an octave. Close and spread H. are often mixed, in order that individual parts may become more melodious and easier to sing, as well as to prevent unpleasant or abrupt skips in the melody; or to avoid an equally faulty monotonous formality of movement.

Though it has been said above that every chord, whether consonant or dissonant, forms H., it must not be understood that any combination of sounds which one may choose to sound together is H. A dissonant chord treated as H. is always judged of according to the nature of its different intervals, of which there are often some that are treated as dissonances, though they are fundamentally consonances, only more or less imperfect. All H. in music is derived from what are called the aliquot tones. When a string is made to vibrate, we think at first that we hear only one sound; but on closer and more careful observation, we early discover that the fundamental sound, particularly when it is a deep one, is accompanied by others in the most perfect H. The accompanying sounds are exactly those of which the chords in music are formed, and on which the foundation of the whole system of H. in music is laid. From the mathematical proportions and the relations of the accompanying sounds to the fundamental or principal sound from which they all arise (see HARMONICS), it follows that H., in its first and natural state, can be only in four parts, and it is then called perfect, or complete; in opposition to H. of two or three parts which cannot be complete, as some of the intervals of the chords, essential to characterize the key or scale, may be lacking. A four-part H. may be so arranged

HARMONY OF THE GOSPELS.

that five, or even more parts may appear, by means of doubling one or more of the intervals in the octave. From this increasing of the parts arises what is called the subordinate H., accompanying the principal or fundamental. In order to avoid faulty progressions in the subordinate H., care must be taken to observe strictly the rules which apply to the intervals in their fundamental state. The purpose of the subordinate H. is only that of ornamenting the original, which the Germans call *figurirung*, commonly called figured H., but should be more properly called florid counterpoint. If it be admitted that the intervals and chords most consonant are also most harmonious, it naturally follows that the union of similar sounds must be the most perfect, therefore the order of perfection in which they rank must arise from their mathematical proportions in relation to the fundamental sound or unison. The common chord of a third, fifth, and octave to a bass note is the most pure and perfect H.; after which follow the chord of the seventh and the chord of the ninth. The inversions of any of these chords are all in various degrees less perfect than their original fundamental H. The position of the intervals in respect to the fundamental note is also an element in the purity of chords; as, for example, a chord of the seventh in close H., is far less satisfactory and pleasing than it is in spread H., where the different intervals are at, or near, their natural distances from the fundamental note. Such considerations are of great importance to the musician, who has to accompany from a figured bass; and also to organ-builders in arranging the composition of mixture-stops. H., in modern music, is therefore a succession of chords according to certain laws. In the early ages of the science, the laws of H. were most arbitrary. Nature presents us with solitary chords, but she does not establish their succession. A collection of chords is not music, any more than a collection of words is a speech. Music, like a discourse, must also have its phrases, periods, punctuation, etc., and all in H. Useful works on H. are those of Dr. Mars, Professor Dehn, and Dr. Fred. Schneider.

HAR'MONY OF THE GOS'PELS: arrangement of the several narratives of the four evangelists to show the points of their agreement as independent writers of the same life of the Lord Jesus. The narratives of the Evangelists, especially of the first three, are in many things close repetitions of each other, and frequently relate the same incidents in words almost identical. In occasional instances, they exhibit seemingly grave discrepancies, whether of facts or of circumstances; one relating an occurrence not noticed by another, or placing an occurrence at a time or in circumstances not easily recognized with the narratives of the other evangelists. At a very early period of Christian literature this difficulty was felt, and for its more complete and easy elucidation, the passages of the several gospels relating to each subject or incident were collected for comparison and mutual illustration. The title under which the earliest compilation of this nature,

HARMONY OF THE SPHERES—HARMS.

which dates from the second half of the 2d c., was known was *Diatessaron*, because it consisted of extracts from the four evangelists. The author of this compilation was the heretic Titian, and it is remarkable that, to give a color to his own peculiar opinions as to the unreality of the flesh of our Lord, he omitted from his collection the entire history of the birth and childhood of Jesus as related by Matthew and Mark (Eusebius, *Ecl. Hist.* iv. 29). St. Jerome states that a similar harmony was compiled about the same time by Theophilus of Antioch, though no trace of such a work is now discoverable; but in the middle of the following century the celebrated Neo-platonist convert, Ammonius Saccas, undertook a new *Diatessaron*, which formed the basis of the well-known *Ten Indexes*, or canons, of the Harmony of the Gospels, in the Greek test, by Eusebius, afterward adapted to the Latin text by St. Jerome, and which continued to be used as a key to the concordance of the gospels by readers both of the Greek and the Latin text, till the 16th c. The canons of Eusebius consist of ten tables. Of these, the first, which contains four columns, exhibits all the passages common to the four gospels; the second, third, and fourth contain three columns, and show the passages found in all of any three of the gospels; the fifth, sixth, seventh, eighth, and ninth are in two columns, and show the passages which occur in any two of the gospels; and the tenth contains the passages found in only one of the gospel narratives. The convenience and utility of such a scheme are at once apparent, and it has led in later times to the numerous and useful compilations, Rom. Cath. as well as Prot., known under the name of synopses of the gospels, the best and most popular of which are enumerated by Tischendorf in the introduction to his own *Synopses Evangelicæ*, p. 9, and foll.

HARMONY OF THE SPHERES: a kind of music which many of the ancients supposed to be produced by the motions of the stars and planets. They attributed this music to the various proportionate impressions of the heavenly bodies on one another acting at proper intervals. Kepler wrote a work on the harmonies of the world, particularly of the celestial bodies.

HARMOST, n. *hâr'mòst* [Gr. *harmozô*, I fit together, I rule]: in *Gr. antiq.*, governor of a Greek island, town or colony, in Asia Minor; also a governor sent into a conquered town by the Lacedæmonians, after the Peloponnesian war.

HARMOTOME, n. *hâr'mō-tōm* [Gr. *harmos*, a joint; *tōmō*, a cutting]: cross-stone, one of the zeolite family, and so called from the joint-like intersection of its rhombic crystals—a silicate of alumina and baryta.

HARMS, *hârmz*, CLAUS: 1778, May 25—1855, Feb. 1; b. Fahrstedt, S. Ditmarsch: German clergyman and religious writer. In 1797, he went to the gymnasium at Meldorf, and 1799 to the Univ. of Kiel. The rationalism of the time, in which he had been to some extent educated, failed to give him satisfaction; and Schleiermacher's *Reden über*

HARMS—HARNACK.

die Religion at last settled his faith. After supporting himself as family tutor, 1802-06, he was appointed Dean of Lundun, N. Ditmarsch, whence he was called, 1816, to Kiel, as archdeacon and afternoon-preacher in the Nicolai-Kirche. Next year, shortly before the tricentenary of the Reformation in Germany, he issued, in defense of Prot. orthodoxy, 95 theses under the title, *Das sind die 95 Theses oder Streitsätze Dr. Luther's*. These produced deep impression throughout Germany, and brought him a call to be bishop of the consistory about to be instituted for the Prot. Church of Russia. This, as well as a call, 1834, to succeed Schleiermacher in Trinity Church, Berlin, H. refused. In 1835, he was made chief pastor and provost in Kiel, but was compelled to resign in consequence of an attack of almost total blindness. The rest of his life was spent in retirement and literary activity. H.'s published works are chiefly sermons, which may be reckoned among the best specimens of modern pulpit eloquence in Germany. Of these, the most famous are his *Winterpostille* (1808, 6te Aufl. 1846) and *Sommerpostille* (1815, 6te Aufl. 1846), to which a new series was added—*Neue Winterpostille* (1826) and *Neue Sommerpostille* (1827).—On H.'s life may be consulted Dorner's *Blätter der Erinnerung an das Jubiläum von H.* (1842) and *H.'s Lebensbeschreibung, verfasst von ihm selbst* (1851).

HARMS, *härmss*, LUDWIG: 1808, May 5—1865, Nov. 14; b. Walsrode, Lüneburg, Hanover: Lutheran minister. He was educated in the Univ. of Göttingen, spent several years teaching, became assist. to his father, who was pastor of the Lutheran Church in Hermannsburg, 1844, and by his popular manners, simple preaching, terrific denunciation of every-day sins, and tender concern for his people, produced a remarkable religious awakening. His labors as preacher and pastor resulted in great spiritual as well as temporal benefits, and were confined to Hermannsburg till the death of his father, 1849. He then built a seminary for the training of missionaries, organized his large parish into a home and foreign missionary soc., began sending out missionaries to all parts of the world, erected and sustained mission stations in Asia, Africa, Australia, and America at an expense of about \$40,000 per year; founded a great printing establishment in Hermannsburg 1854, and began the publication of a missionary journal and various religious books. He claimed never to have asked any man for anything, and asserted that all the funds given by numerous well-wishers, for carrying on his great work, came to him in direct answer to prayer.

HARNACK, ADOLF, PH.D., D.D., German church historian; b. Dorpat, Livonia, Russia, 1851, May 7. He was educated at Dorpat Univ., became a private tutor at Leipzig 1874, and was appointed prof. extraordinary of church history at Giessen Univ. 1876, ordinary prof. there 1879, and similar prof. at Marburg 1886. He is author of numerous books, tracts, and periodical articles, written from a historico-critical standpoint; published a history of *Gnos-*

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ticism (1873), and an edition of the *Apostolic Fathers*, with Gebhardt and Zohn (1876-78); and since 1881 has edited with Schürer the *Theologische Literaturzeitung*; and since 1882, with Gebhardt, *Texte und Untersuchungen zur Geschichte der altchristlichen Literatur*.—His father, THEODOSIUS H., D.D. (b. St. Petersburg, 1817, Jan. 3), was prof. extraordinary and ordinary of theol. in the universities of Dorpat and Erlangen, retired 1875, and has since published several books and other contributions to religious literature.

HARNESS, n. *hâr'nēs* [OF. *harnas*, or F. *harnais*; It. *arnese*, originally the harness and armor of a knight, all manner of harness: Sp. *arnés*, harness, coat of mail; *guarnescer*, to garnish, to adorn: Gael. *airneis*, household stuff, goods: Ger. *harnisch*, armor]: armor; the tackle or fittings of horses when employed in dragging carts, coaches, gigs, etc.: V. to put on warlike accouterments; to prepare a horse with the necessary fittings for drawing a vehicle; in *OE.*, to defend; to protect. **HAR'NESSING** imp. **HAR'NESSED**, pp. *-něst*. **HAR'NESSER**, n. *-sér*, one who.

HARNETT, *hâr'nět*, CORNELIUS: 1723, Apr. 30—1781, Apr. 20; b. England (or N. C.): statesman. He acquired a large estate near Wilmington, N. C.; was a member of the provincial assembly of N. C. 1770-71; pres. of the provincial council and acting gov. 1775; member of the provincial congress at Halifax, N. C., and of the committee to draft a state constitution and bill of rights 1776; member of congress 1777-80, and a signer of the articles of confederation. He was excluded by name from Sir Henry Clinton's offer of pardon, and died in British captivity.

HARO, *âr'ró*: small town of Spain, province of Logroño, 26 m. w.n.w. of the town of Logroño prettily situated in a fertile plain on the right bank of the Ebro. It has manufactures of hats, leather, brandies, and liquors. Much wine is made in the neighborhood. Pop. 6,500.

HAROE' RIS: in Egyptian mythology, the elder Horus, son of *Seb*, the Egyptian Saturn, and *Nu*, or Rhea; said to have been born on the second day of the epact. He was the brother, and not the son, of Osiris, from whom he is to be distinguished. In the inscriptions, he is said to be the son of Atum, of Ptah or Vulcan, and Athor or Venus, according to different legends. He was also lord of the South and Nubia, and particularly ruler over the heaven, illuminating the world with the brightness of his eyes. As such, he was identified with the sun and Apollo, and represented as hawk-headed, wearing the crown of the upper and lower world. His name is found also in the Greek dedications to him of the temples of Ombos and Apollinopolis Parva. His connection with the sun is, however, undoubted, as he is made on one inscription a child of the sun, and type of Mentu Ra or Mars. The festival of his eyes, which mythically represented the sun and moon, took place on the 30th Epiphi.—Birch, *Gallery of Antiquities*, I. 36: Wilkinson, *Manners and Customs*, IV, 395.

HAROLD I.—HAROLD III.

HAROLD, or **HARALD**, *här'old*, I. (surnamed **HAARFÄGER** or beautiful-haired), King of Norway, founder of the old royal dynasty of Norway: abt. 850—abt. 933; son of Halfdan Svarte, a powerful jarl in Norway, noted as the earliest lawgiver of his country. H. was of the ancient race of the Ynglings in Sweden. According to the popular saga, H. was induced to attempt the subjugation of the whole of Norway, through his love to a high-born maiden, Gyda, who declared that she would not be his wife until he was sole king of Norway; and he swore that he would neither cut nor comb his hair till he had subdued all the land to his sway—an oath which he kept. After many years' contests with his brother jarls, he finally reduced the whole of the country from Finmarken to the Naze of Norway; and after defeating the last general confederacy of the independent Norwegian chieftains in a naval battle at Hafursfjord, the present Stavangerfjord, he remained sole ruler of the land (872). Previously to his reign, Norway, like the other Scandinavian countries, had been divided into numerous independent districts or tribes, governed by their several kings. H. replaced all these rulers by jarls of his own, under whom were placed *Herser* or bailiffs, to whom was committed the charge of seeing that the tax imposed over all the land was faithfully paid. H.'s severity compelled the deposed rulers to seek other homes; and his reign is memorable for the many new settlements made by these exiles. Thus, the Orkneys were settled by the fugitive Ejnar, son of the king's friend, Rognvald, Jarl of More; while another son, Ganger Rolf, who had incurred H.'s anger by repeated acts of piracy, sailed with his followers 876 to France, where he founded the Norman power. Other exiled Norwegian jarls or kings colonized the Hebrides, Shetland, and Faröe Islands, and Iceland, whence they continued their customary sea-roving and plunders until these islands, with the exception of Iceland, were subdued by Harold. Although a barbarian, he ruled with a policy in advance of his age, and by his firmness succeeded in suppressing for the time the private warfare and sea-piracy which had prevailed in Norway before his reign; but the dissensions of his numerous sons checked all the good that might have resulted from his measures. To restore concord in his family, he divided his dominions among his children, reserving only the supreme power to himself. He died in 933 at Trondhiem, which he had made his capital, and was succeeded by his son, Eric Blodoxa, or the Blood-axe, to whom he had three years before resigned the government.

HAR'OLD, or **HAR'ALD** III. (surnamed **HAARDRAADE**, or Stern in Council), King of Norway. abt. 1015–1067; son of Sigurd, chief of Stingarige, and descendant of Harold I. In his boyhood, he was present at the battle of Sticklestad, in which his brother Olaf, surnamed the Saint, King of Norway, was slain; and he afterward sought an asylum at the court of his relative, Jaroslav, Duke of Russia, whose daughter he sought in marriage. The rejection of his suit,

HAROLD I.

however, again drove him forth; and having gone to Constantinople, and become captain of the Vaeringjar, or Scandinavian body-guard of the Greek emperors, he experienced many marvellous adventures, which have supplied abundant materials for the narratives of the older sagas and modern romances of the north. H. took part in the expedition against the pirates of the Mediterranean; and is said to have visited Jerusalem, where he fought successfully against the Saracens, whom he defeated also in Sicily and Africa in 18 pitched battles. On his return to Constantinople, he drew upon himself the vengeance of the Empress Zoe, whose proffered love he had rejected, and with difficulty escaped from the prison into which he had been thrown on pretended charge of treason. Having made his escape, he returned to Russia, married the daughter of Duke Jaroslav, and took her with him to Norway, where his nephew, Magnus (son of St. Olaf), agreed to divide the supreme power with him, in return for a share of his treasures. The death of Magnus 1047 left him sole king of Norway. His unruly spirit would not, however, suffer him to rest; and in opposition to the pledge that he had given his dying nephew, he entered into a war to dethrone Svend, the king of Denmark, on whose crown he had no just claim. Although he was successful in battle against the Danes, he gained no real advantage by the contest; and 1064 he recognized the right of Svend, nephew of Canute to the throne of Denmark, and having concluded a peace, occupied himself for a time with the internal affairs of Norway. In 1066 he landed in England, to aid Tostig against his brother Harold, King of England, and possibly hoping to re-establish the old Scandinavian sovereignty in England; but was slain in battle at Stamfordbridge; and his followers were obliged to retreat to their ships, and sail for Norway, under the command of Olaf, son of the slain monarch.

HAROLD I. (surnamed HAREFOOT, probably on account of his swiftness in running), King of England: d. 1040, Mar. 17 (reigned 1035, or 37—1040); illegitimate son of Canute and Alfgiva of Northampton. According to agreement on Canute's second marriage, his son by Emma was to inherit the English as well as the Danish throne; this son, Hardicanute, was, however, in Denmark at the time of his father's death, and being very unpopular with the Danish part of the population in England, lost half of his kingdom. Leofric, Earl of Mercia, led the cause of H., while the powerful Earl Godwin espoused that of Hardicanute. Civil war was happily averted by a compromise, and the kingdom was divided. H. received London, with all the provinces n. of the Thames; while the possession of the south was given up to Emma for Hardicanute. Emma fixed her residence at Winchester, and established her authority over her son's share of the partition. In 1037, the thanes and people of Wessex submitted to H., and he was crowned king of all England, though it is stated that the Abp. of Canterbury, Egelnoth, at first refused to perform the ceremony or to allow any of his brother-bishops to do so. He died at Oxford.

HAROLD II.—HARP.

HAROLD II., King of the English: abt. 1022–1066, Oct. 14 (reigned 1066, Jan. 5–Oct. 14); second son of the powerful Godwin, Earl of Kent. On the death of Edward the Confessor, the Witenagemôte (q.v.), in the exercise of its rights, set aside the claims of Edgar Atheling, and, ignoring the reputed bequest of the late sovereign in favor of the Duke of Normandy, elected H. to fill the vacant throne. Duke William immediately asserted his claim, which was supported by H.'s brother Tostig and Harold Hardrade, King of Norway, for the sake of obtaining the duke's assistance to reinstate the former in the government of Northumbria. Tostig and the king of Norway landed on the coast of Yorkshire, and after defeating Morcar and Edwin, Earls of Northumbria and Mercia, advanced to York, but were met by H. at Stamfordbridge, and totally routed. Three weeks afterward William landed in England; the contending armies met at Senlac (now Battle) about nine m. from Hastings, where H.'s defeat and death made the Duke of Normandy undisputed ruler of England. The character of H. is presented in very different lights by the English and the Norman writers. Probably both are extreme. On the whole, H. may be deemed to have possessed many of the virtues proper to a ruler.

HAROLD'S CROSS: village-suburb of Dublin, on the Grand canal, three m. s. by w. from the centre of the city, and now included in Rathmines and Rathgar township. It is built nearly in the form of a square, within which lies a spacious green, anciently the scene of periodical village festivals. It is the seat of a cotton-factory; and though the village is poor, there are many handsome villas in the vicinity, also the cemetery of Mount Jerome. There are two convents of nuns, with free schools attached, for the girls of the village.

HAROUN'-AL-RAS'CHID: see HARÚN.

HARP, n. *hárp* [Icel. *harpa*; Dan. *harpe*; Ger. *harfe*, a harp: F. *harpe*, a harp—from *harper*, to seize: mid. L. *harpa*]: a large musical instrument, strung with strings or wires, which are played on with the fingers—so named from plucking the strings with a hook or the fingers; in *agriculture*, etc., a sifting implement for cleaning grain or screening lime: V. to play on the harp; to bring out a sound from the harp; in *OE.*, to touch any passion; to affect or move. **HARP'ING**, imp. **HARPED**, pp. *hárppt*. **HARP'ER**, n. *-ér*, one who; a minstrel. **HARP'IST**, n. one who plays on or teaches the harp.

HARP, v. *hárp* [see **HARK** 2 and note]: to cling persistently to the same subject of talk; to return to an old subject or idea, and dwell on it vexatiously and tediously. **HARP'ING**, imp.: **ADJ.** dwelling on continually: **N.** a continual dwelling on. **TO HARP ON ONE STRING**, to dwell on or treat any subject in a disagreeable and exclusive way. *Note.*—**HARP** 2 is a corruption or misspelling of **HARK** 2, and has apparently no connection with **HARP** 1, though constantly confused with it.

HARP: musical stringed instrument, much esteemed by

HARPE.

the ancients. In Egypt, the figure of the H. is found delineated from the earliest ages in many different forms, some very simple, and others with much taste and ornament; some played on while standing, others while kneeling. The Celtic bards held the H. in the greatest honor. In the Highlands of Scotland the instrument has disappeared, but it is still in use in Wales, and to some extent in lingers in Ireland, where, from its former prevalence, it is adopted as a national symbol. The old Franks and Germans punished those severely who injured a harpist in the hand. The H. was used as an accompaniment to the psalms sung by the early Christian congregations. There are three kinds of harps now known—the ordinary Italian H., strung with two rows of wire-strings, separated by a double sounding-board; this kind is now little used, being very imperfect. The double H., or, as it is called, David's H., is a more useful instrument, in the form of a triangle, with sounding-board and gut-strings; it is always tuned in the principal key of the music, while the strings are altered to suit any modulations out of the key, by pressure of the thumb, or turning the tuning-pins of certain notes. These defects led gradually to the invention of the pedal H., which has seven pedals, by which each note of the diatonic scale, in all the different octaves, can be made a semitone higher. The compass of the pedal H. is from contra F. to D of the sixth octave above. In order to have the B flat, it must be tuned in the key of E flat. The music for the H. is written in the base and treble clef, the same as pianoforte music. A celebrated harpist, Hochbrucker, in Donauwörth, invented the pedals 1720; though some say they were invented by J. Paul Velter, Nürnberg, 1730, who at least added the piano and forte pedal. After numerous attempts at further improvements, the H. at length reached a degree of perfection by the invention of the double-action pedal H. by Erard in Paris, which scarcely leaves anything to be desired. By means of Erard's invention, each string can be sharpened twice, each time a semitone; so that the C string may be C flat, its full length, C natural by the first movement of the pedal, and C sharp by the next movement. The double-action H. is tuned with all the pedals half-down, and in the key of C natural. In modern days the domestic use of the H. is very limited. The improvements make it manageable, and the tone is confessedly beautiful; but a good instrument is very costly, and the tuning requires almost professional skill. It is however coming into increasing use in orchestration, and without its help the scores of the more recent great masters cannot be completely rendered. It has been introduced with fine effect into some cathedral services.

HARPE, *ârp*, JEAN FRANÇOIS DELA: 1739, Nov. 20—1803, Feb. 11; b. Paris. He studied at the Collège d'Harcourt, and led for some time a rather checkered life. In 1762 he published a volume of juvenile poems, and in the following year his tragedy of *Warwick* appeared which brought him fame and money. Excepting the *Lycée*, this is by far the

HARPER—HARPER'S FERRY.

best of his works, though the writing has but little force. Grimm has admirably characterized the play as 'le coup d'essais d'un jeune homme de soixante ans.' La H.'s three subsequent plays in the same vein, *Timoléon*, *Pharamond*, and *Gustave Wasa*, entirely failed. Later plays, *Melanie*, *Philoctete*, *Coriolan*, were more successful. But his best known works are his critical lectures, delivered both before and after the Revolution, which, published in 12 vols. (1799–1805) as *Lycée, ou Cours de Littérature*, long remained a standard of literary criticism. That portion which relates to ancient literature is of little value, and that in which the author treats of contemporary writers is entirely worthless, owing to the bitterness and pride of the critic. The intervening portion gives a fairly complete critical history of French literature. His *Correspondance Littéraire*, published 1801, by the bitterness of its criticisms, rekindled fierce controversies.

HARPER, ROBERT GOODLOE, LL.D.: 1765–1825, Jan. 15; b. near Fredericksburg, Va.: lawyer. He entered the Revolutionary army when 15 years old, graduated at the College of New Jersey 1785, was admitted to the bar in Charleston 1786, served in the S. C. legislature and congress 1795–1801; attained the rank of maj.gen. in the war 1812–15; married a daughter of Charles Carroll of Carrollton and settled in Baltimore; was U. S. senator from Md. 1815–16, resigning to become a Federalist candidate for vice-pres., and after a trip to Europe 1819–20 applied himself to the promotion of internal improvements and the interests of the American Colonization Society.

HARPER, WILLIAM RAINEY, PH.D., D.D.: educator and author: 1856, July 26— — — — —; b. New Concord, O. He graduated at Muskingum Coll. 1870; was principal of Masonis Coll., Macon, Tenn., 1875–76; tutor in preparatory dept. Denison Univ. 1876–79; principal of same 1879–80; prof. of Hebrew and cognate languages Bapt. Union Theol. Sem. 1879–86; principal Chautauqua Coll. Liberal Arts 1885–91; elected principal of the Chautauqua system 1891; prof. of the Semitic languages at Yale 1886–91; Woolsey prof. of biblical lit. at Yale 1889–91. He was the first pres. of the Univ. of Chicago, and head prof. of Semitic languages and literature there. He is noted for powers as an executive and organizer, and as an exponent of the inductive system of language-study; was joint author of *Inductive Latin Method*; *Inductive Greek Method*; *Inductive Latin Primer*; *Hebrew Method and Manual*; *Elements of Hebrew Syntax*; *Hebrew Vocabularies*; *Harper's Elements of Hebrew*; *Harper and Weidner's New Testament Greek Method*; *Cæsar's Gallic Wars*; *Vergil's Æneid*, etc.; also edited the *Old and New Testament Student*.

HARPER'S FERRY: town of Jefferson co., W. Va.; at junction of the Shenandoah and Potomac rivers; on the Baltimore and Ohio railroad; 45 m. n.w. of Washington, 81 m. w. of Baltimore, 97 m. e. of Cumberland: in the basin formed by Maryland, Loudoun, and Bolivar Heights. It is the seat of Stover College for colored youth, and con-

HARPIES—HARPOCRATES.

tains 5 churches and a normal school. Previous to the civil war H. F. was a beautiful town, commanding magnificent scenery and containing an extensive national armory and arsenal; but it has since lost its attractiveness, except the beauty of its natural surroundings. It was the seat of the last stand and capture of John Brown, the abolitionist, 1859, Oct. 16-18, and of several encounters between the Union and Confederate forces during the civil war. In 1861, Apr., it was captured by the Confederates from a small Union guard party, and held till June, when they destroyed the armory, arsenal, and bridge across the Potomac, and evacuated it. In 1862, Sep., it was invested by the Confederates, who captured 12,000 Union troops, 73 guns, and 13,000 small arms. and large stores; and the same month it was re-occupied by the Union army and held to the close of the war. In 1878 the most flourishing part of the town was nearly destroyed by a flood in the Shenandoah. Pop. (1880) 764; (1890) 958; (1900) 896.

HARPIES, n. plu.: see **HARPY**.

HARPINGS, n. plu. *hár-pîngz*: pieces of oak which hold the timbers of the fore-and-aft cant-bodies till a ship is planked.

HARPOCRATES, *hár-pök'ra-téz*, in Ancient Mythology: name given by Greek writers to the younger Horus, the hieroglyphical inscriptions calling him *Harpa khrut*, 'Horus the child,' son of Isis: see **HORUS**. According to the legend, he was a younger son of Osiris and Isis, who, having placed an amulet around her neck, gave birth to him at the winter solstice. He is described by Plutarch as lame in the lower limbs when born, to indicate the weak and tender shootings of corn. He is represented as a child, and his finger is placed on his mouth, an action indicative of youth; but mistaken by the Greek and Roman writers for that of silence, of which they made H. the divinity. The Temple of Edfou or Appollinopolis Magna was dedicated to him, and in the sculptures he symbolizes the sun in the earliest hours of the day. He has generally been considered to be the winter sun, but represents rather the feeble and nascent sun of the later mythology. The lotus, on which he is often depicted sitting, and which was thought to open at sunrise and close at sunset, was particularly sacred to him. His worship was introduced as part of the Isiac cult of Rome, but was driven from the capital in the consulship of Piso and Gabinius: it was very popular in the days of Pliny. Although the name of H. is not mentioned earlier than Eratosthenes, yet as he mentions it as part of that of an ancient monarch, it was undoubtedly of high antiquity.—Birch, *Gallery of Antiquities*, I. 37; Wilkinson, Sir G., *Mann. and Cust.*, IV. 405; Iablonski, *Pantheon*, I. 241.

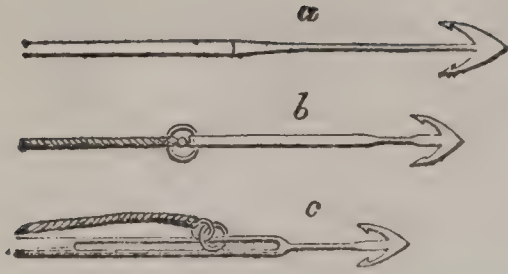
HARPOON—HARP SEAL.

HARPOON, n. *hâr-pôn'* [F. *harpon*, primarily a kind of cramp-iron—from *harper*, to seize, to grapple: Dut. *harpoen*, a kind of dart]: a long-shafted barbed spear, held by a long cord, used in catching whales and other large cetaceans: see **WHALE**: V. to strike or kill with a harpoon. **HARPOON'ING**, imp. **HARPOONED'**, pp. *·pônd'*. **HARPOON'ER**, n. *-ér*, or **HAR'POONEER'**, n. *-ér'*, one who throws the harpoon. **HARPOON-ARROW**, arrow shot from a bow, used in fishing by the Alaska Esquimaux. **HARPOON-FORK**, hay-fork consisting of two barbed tines. **HARPOON-GUN**, gun for discharging a harpoon of any kind, whether the toggle-iron or the bomb-lance. **HARPOON-SHUTTLE**, long shuttle or needle used in weaving mats of brush employed in construction of dikes and levees. **BOMB-HARPOON**, explosive harpoon, also called bomb-lance; it may be hurled by hand or discharged from a swivel-gun. **ELECTRIC HARPOON**, bomb-lance in which an electric fuse fires the charge, the connection being made by means of a wire in the harpoon-line. **EXPLOSIVE HARPOON**, harpoon in the head of which is carried an explosive agent.

HARPOOT, *hâr-pôt'*, or **KHARPUT**: town in Turkish Armenia, seat of a mutasarrif (Turkish district gov.); 60 m. n.w. of Diarbekir. It is on the highway to Sivas, on a rocky eminence in a fertile plain watered by the eastern Euphrates. Besides imposing ruins of a castle on the height, it contains an ancient Jacobite church and convent. It has a Catholic Armenian bishop, and is the seat of an important American Prot. mission, with prosperous college and schools. Pop. about 25,000.

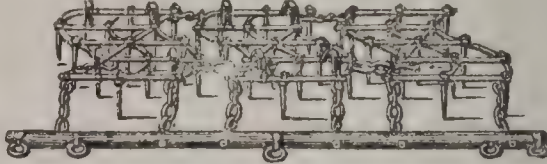
HARPORHYNCHUS, *hâr-pō-rĭng'kŭs* [Gr. *harpē*, sickle; *rungchos*, bill]: genus of mocking-thrushes, family *Turdidæ*, sub-family *Miminæ*, of which sub-family all the members are exclusively American: bow-billed thrasher (also called brown thrasher, *H. rufus*) belongs to this genus; it is common to the United States at large; the other species found in the United States are confined to the s.w.—e.g., *H. rufus longirostris*, *H. curvirostris*, *H. cinereus*, *H. redivivus*, *H. crissalis*.

HARP SEAL: most valuable commercially of the seal family; principally found on the coasts of Newfoundland, Greenland, and Labrador, though occasionally seen in the extreme n. of Europe and Asia; named from harp-shaped lines on its back. It is the chief seal sought by Newfoundland fishermen, has a valuable skin, and yields excellent oil.

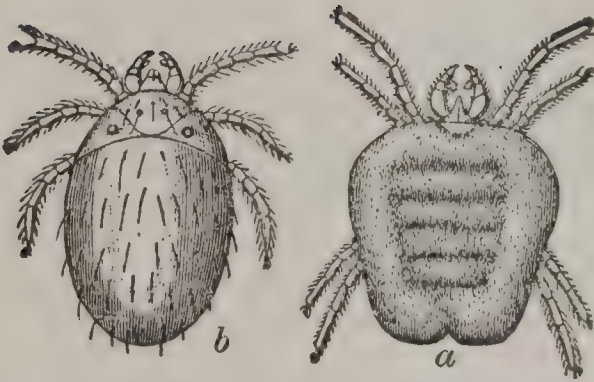


a, Hand-harpoon; b, c, Gun-harpoons.

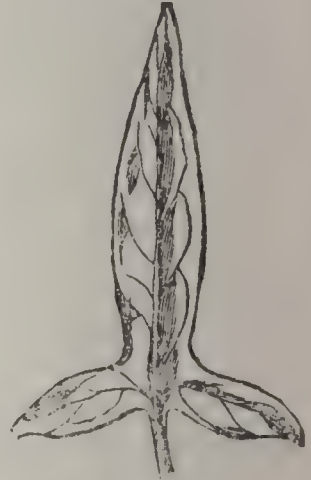
Harpy.—From an Antique Gem.



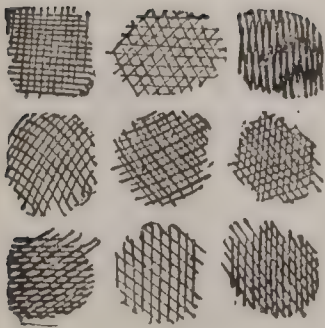
Harrow.



Harvest-bug: a, *Trombidium holosericeum*, female (mag., 9 diameters); b, Larva, full-grown (harvest-bug).



Hastate.



Hatching.



Hatchment of an Equire: his arms impaled with those of his wife—the wife surviving.

HARP-SHELL—HARPY.

HARP-SHELL (*Harpa*): genus of gasteropodous mollusks of the whelk family (*Buccinidae*), having the last whorl of the shell very large, the shell ripped longitudinally, the foot of the animal very large. The species, not very numerous, are found in the seas of warm climates, particularly at the Mauritius. The shells are much prized for



Harp-shell.

their beauty, but must be kept in drawers, and not exposed to light, or their delicate and brilliant colors will fade.

HARPSICHORD, n. *hârp'sî-kâwrd* [*harp* 1, and *chord*: OF. *harpechorde*—from *harpe*, a harp; *chorde* or *corde*, a string]: keyed musical instrument, strung with wires; formerly in extensive use, now little known. In shape it was exactly like a grand pianoforte, to which its internal arrangements also were similar. The sound from the strings was produced by a small piece of crow-quill or a piece of hard leather, which projected out of a slip of wood, called the jack, that stood upright between the strings, and was pushed upward by the key till the quill or leather twitched the string, causing a brilliant but somewhat harsh sound, entirely without any means of modification, in respect to loudness or softness. Specimens of the H., though becoming rare, are still seen in good preservation as articles of vertu or curiosity. Many Italian and Dutch harpsichords were highly ornamented by eminent artists with valuable oil-paintings on the inside of the lid. The date of the invention of the H. is uncertain. Before the 15th c., there is no trace of its existence: it was introduced into England early in the 17th c. In the 18th c., Kirkman, and later, Broadwood and Schudi, were the famous makers in London. After the invention of the pianoforte, of which it is the original, the H. and all instruments of its kind, such as the spinet, were superseded. See **PIANOFORTE**.

HARPSWELL, *hârp'swêl*: tp. in Cumberland co., Me., comprising a peninsula and several small islands in Casco Bay, 14 m. e. of Portland. It is picturesquely situated, has fine fishing and sailing facilities, contains 5 churches, and has become a popular summer resort. Pop. (1870) 1,749; (1890) 1,766; (1900) 1,750.

HARPY, n. *hârp'pî*, **HARPIES**, n. plu. *-pîz* [F. *harpie*, a harpy: L. *harpyiæ*; Gr. *harpûiai*, the spoilers, the harpies—from *harpazō*, I seize, I ravage]: in Greek mythology, winged

HARPY.

monster, considered as a minister of the vengeance of the gods. Various accounts are given of the numbers and parentage of the Harpies. Homer mentions but one, Hesiod enumerates two—Aëlle and Okypete, daughters of Thaummas the Oceanid Electra, fair-haired and winged maidens, very swift of flight. Three are sometimes recognized by later writers, who call them variously daughters of Poseidon or of Typhon, and describe them as hideous monsters with wings and sharp claws, of fierce and loathsome aspect, with their faces pale with hunger, living in an atmosphere of filth and stench, and contaminating everything that they approached. The most celebrated tradition regarding the Harpies is connected with the blind Phineus, whose meals they carried off as soon as they were spread for him; a plague from which he was delivered by the Argonauts, on his engaging to join in their quest. The Boreads Zetes and Calais attacked the Harpies, but spared their lives on their promising to cease from molesting Phineus.—A harpy in heraldry is represented as a vulture with the head and breast of a woman.—The name is figuratively applied to a plunderer or extortioner.



Harpy.



Harpy Eagle (*Harpyia destructor*):

From a specimen in the Royal Zoological Gardens, Regent's Park, 1851.

HARPY, *hâr'pî* [from the H of anc. myth]: name given to some of the *Falconide*, as the Marsh Harrier (see **HAR-**

HARQUEBUSS—HARRIER.

RIER) of Europe, and the H. or H. Eagle of S. America (*Harpyia destructor* or *Thrasaëctus harpyia*), inhabitant of the great tropical forests, where it preys chiefly on quadrupeds, and to a large extent on sloths and young deer. Of all birds, it has the most terrific beak and talons. It is larger than the common eagle; is short-winged and short-legged; the upper mandible greatly hooked; the feathers of the head capable of being erected into a great ruff and crest. It has not so elegant a form as the true eagles, but is probably equal to any of them in strength and courage. When adult, it is generally of blackish slate-color, with gray head and white breast and belly. It makes its nest in trees. Wonderful stories are told of the fierceness of this bird. As yet it is little known by scientific students. Its affinities are undetermined, whether with Eagles, Buzzards, or Hawks; though the probability seems to be with the Eagles.

HAR'QUEBUSS, or HAR'QUEBUS, or HAR'QUEBUSE: see ARQUEBUS.

HARRIDAN, n. *här'rĩ-dǎn* [Dut. *schærde*; Wall. *hard*, or *har*, a breach or nick: the union of the simple elements, *har*, breach, and *dǎn*, tooth: comp. OF. *haridelle*, a lean, ill-favored jade: comp. Sp. *haragan*, an idler, a lounge]: an ill-tempered, ugly old woman; a decayed or worn-out strumpet.

HARRIED: see under HARRY.

HARRIER, n. *här'rĩ-er* [from *hare*]: variety of dog used for hare-hunting, whence its name; probably of the same origin with the foxhound (q.v.)—from which it differs chiefly in its smaller size—or perhaps derived partly from the beagle. It does not exceed 18 inches in height at the



Harrier.

shoulder, but otherwise greatly resembles the foxhound, even in colors, though it is not so swift. Its scent is extremely keen, which enables it to follow all the doublings of the hare.

HARRIER—HARRINGTON.

HARRIER [see **HARRY**], (*Circus*): genus of *Falconidæ*, allied to buzzards (q.v.), but differing from them in the



Hen Harrier (*Circus cyaneus*).

more slender form of the body, longer and more slender legs, longer wings and tail, and in having the feathers around the eyes placed radiating, somewhat as in owls, a peculiarity which distinguishes them from all other falconidæ. They are remarkable for their low flight, skimming along the ground in pursuit of small quadrupeds, reptiles, etc. The **MARSH H.** (*C. æruginosus*) called also the **MOOR BUZZARD**, and sometimes the **HARPY** and the **DUCK HAWK**, is a species about 21–23 inches long. The head of the adult male is yellowish white.—The **HEN H.** (*C. cyaneus*) named from its depredations in poultry-yards, is 18 or 20 inches long, the adult male of almost uniform gray color, the female brown. The female is known as the **RINGTAIL**, from a rust-colored ring formed by the tips of the tail-feathers. The male of the Hen H. is called in Scotland the *Blue Hawk*.

HAR'RI-KAR'I: see **HARA-KIRI**.

HARRIMAN: city, Roane co., Tenn., on the E. Tenn. Va. and Ga. railroad and the Cincinnati Southern railway, and on Emory river. It is a mining and manufacturing centre, coal and iron-ore being plentiful in the vicinity. Chief industries are manufactures of hardware, tools, and agricultural implements. Rolling mills and foundry and machine shops, also lumbering and brick-making, thrive. There are public schools, a national bank, an exposition hall, and several hotels. H. has an electric-lighting plant and belt railroad line. One daily and one weekly paper are published. Prohibition of the liquor traffic was included in the original title-deeds of the whole town-site. Pop. (1900) 3,442.

HARRINGTON, hă'r'ing-ton, **JAMES**: 1611, Jan.—1677, Sep. 11; b. Northamptonshire: English political writer.

HARRIS.

He studied at Oxford, and then visited the continent. On the breaking out of the civil war, he took part with the parliament, and 1646 was appointed by the parliamentary commissioners one of the personal attendants of the monarch. After the execution of Charles, he withdrew from public notice, and devoted himself to the elaboration and completion of his political system. The result was his famous *Oceana*. Eventually he became hopelessly insane. He died at Westminster. An edition of his writings was published by Toland 1700, and a more complete one by Dr. Birch 1737. The best ed. is probably that by Hollis (with Toland's Life) 1771.

HARRIS, *hār'is*, ELISHA, M.D.: 1824, Mar. 4—1884, Jan. 31; b. Westminster, Vt.: physician. He graduated at the College of Physicians and Surgeons of New York 1849, began practicing in that city, became supt. and physician-in-chief of the quarantine hospital and constructed a floating hospital 1855, was an original member of the U. S. Sanitary Commission, aided in organizing the Metropolitan Board of Health in New York, and became sanitary supt. of New York 1868. He was delegate to the International Medical Congress of the American Public Health Assoc. 1876, pres. of the assoc. 1878, and was sec. of the State Board of Health from 1880 till his death. Dr. H. invented the railroad ambulance adopted by the Russian govt. for its army, and energetically promoted tenement-house reform in New York.

HARRIS, GEORGE, D.D.: theologian: b. East Machias, Me., 1844, Apr. 1. He graduated at Amherst College 1866, and Andover Theol. Seminary 1869, was pastor of the Congl. Church at Auburn, Me., 1869–72 and at Providence, R. I., 1872–83, and in the latter year became Abbot prof. of Christian theol. in the Andover Theol. Seminary; became president of Amherst College, 1899.

HAR'RIS, HOWELL: 1714–1773, July 21; b. Trevecca, Wales: evangelist. After completing his studies at Oxford Univ., he became an open-air preacher in Wales, organized 300 religious societies, received the co-operation of Wesley and Whitefield, founded Calvinistic Methodism in Wales, raised and commanded a regt. of his own people during the French war, and had wonderful success as a preacher, though never ordained as a pastor.

HAR'RIS, JAMES: English philologist and logician: 1709, July 20—1780, Dec.; eldest son of James H., of Close, Salisbury, and of Lady Elizabeth Ashley Cooper, sister of Lord Shaftesbury, author of the *Characteristics*. He was educated at Salisbury, and Wadham College, Oxford, and studied law; but his father having died 1734, leaving him a large estate, he gave his whole time, for 14 years, to the study of his favorite Greek and Latin authors. His only son, became the first Earl of Malmesbury. In 1761, he was returned to parliament for Christchurch, which seat he retained until his death. In 1762, he was appointed a lord of the admiralty, and the next year,

HARRIS.

Lord of the treasury, and 1774, sec. and comptroller to the queen. He is known as the author of *Hermes, or a Philosophical Inquiry concerning Language and Universal Grammar*, a work of great erudition, published 1751. 'It is written, says Coleridge, 'with the precision of Aristotle and the elegance of Quintilian.' He had previously published three treatises—*On Art*; *On Music, Painting, and Poetry*; and *On Happiness*. In 1775 appeared his essay *On Philosophical Arrangements*, part of a large projected work on the Logical System of Aristotle. His last work, entitled *Philological Inquiries* (1780), consists of a series of criticisms and comments on the principal ancient, mediæval, and modern authors. His works, with Life by his son, the Earl of Malmesbury, were published, London 1801.

HARRIS, JOEL CHANDLER: dialectic author: b. Eatonton, Ga., 1848, Dec. 8. He learned the printer's trade, studied and practiced law, became an editor of the *Atlanta Constitution*; and beside numerous contributions in prose and verse to the newspaper and magazine press published *Uncle Remus, His Songs and His Sayings: the Folk Lore of the Old Plantation* (New York, 1880); *Nights with Uncle Remus* (1883); and *Mingo and other Sketches* (1883). His rendering of negro dialect, and sketches of negro character are almost unrivalled.

HARRIS, JOHN, D.D.: 1802, Mar. 8—1856, Dec. 21; b. Ugborough, Devon, England: theologian. He was educated at Hoxton College, ordained an independent minister at Epsom 1827, became pres. of Cheshunt College 1837, and principal and prof. of theol. in New College, near London, 1850. His published works which had large circulation, include the prize essays *Mammon* (1836), and *The Great Commission* (1842); and *The Great Teacher* (1835), *Britannia* (1837), *Pre-Adamite Earth* (1847), *Man Primeval* (1849), and *Patriarchy* (1855).

HARRIS, SAMUEL: 1724, Jan. 12—abt. 1794; b. Hanover co., Va.: Bapt. minister. He was a warden of the Established Church, col. of militia, and burgess, commissary, and sheriff of Pittsylvania co.; was converted and baptized 1758; spent several years as an exhorter among poor white settlers; was ordained 1769, gave all his property to religious and charitable uses, and suffered persecution from his former church associates; and as a recognition of his faithful service was chosen by the Gen. Assoc. of Separate Baptists an 'apostle,' and was ordained by the laying-on of hands by every minister in that body 1774.

HARRIS, SAMUEL, D.D., LL.D.: Congl. theologian: b. East Machias, Me., 1814, June 14. He graduated at Bowdoin College 1833, and Andover Theol. Seminary 1838, and was principal of Limerick (Me.) Acad. 1833-4, Washington Acad., East Machias, 1834-5, 1838-41; pastor of the Congl. Church, Conway, Mass. 1841-51; at Pittsfield, Mass. 1851-55, prof. of systematic theol. in the Bangor Theol. Seminary 1855-67, pres. of Bowdoin College 1867-71; and since 1871 has been Dwight prof. of syste-

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matic theol. in Yale Univ. He received the degree D.D. from Williams College 1855, and LL.D. from Bowdoin College 1871, and has published among other works *Zaccheus; or the Scriptural Plan of Beneficence* (1844), *Christ's Prayer for the Death of his Redeemed* (1863), *The Kingdom of Christ on Earth* (1874), and *The Philosophical Basis of Theism* (1883)—the last a work of great richness and fulness of thought.

HARRIS, THOMAS LAKE: founder of 'The Brotherhood of the New Life': b. Fenny Stratford, England, 1823, May 15. While a child he removed with his parents to Utica, N. Y.; began writing for the press and composing verses at an early age; became a Universalist minister and pastor of the Fourth Universalist Soc. of New York; organized an Independent Christian Soc. and preached to it till 1850, when he became a Spiritualist. He then spent 5 years lecturing on Spiritualism through the United States, and established a newspaper and several societies, lectured in the leading cities of Great Britain and won many adherents to his belief 1858-61, and on his return settled with his followers on a farm at Wassaic, Dutchess co., N. Y. The increase of members soon made more ground necessary; several large farms were bought in and near Brocton, Chautauqua co., N. Y., and the entire establishment was removed thither 1867. About the same time the community was partially reorganized and given its present name, and in 1875 a declaration and explanation of its principles were first published. The 'Brotherhood' is a co-operative but not communistic body, repudiates proselytism, hold sacred the Scriptures and the marriage relation, is without a written form of govt., observes a belief in which the principles of Plato, Swedenborg, and Fourier are combined, keeps every 5th day as one of rest from labor, exacts even justice from its members, and pursues a systematic course of agricultural and industrial labor. H. has published many prose and poetical works descriptive of the philosophy of 'The Brotherhood.'

HARRIS, TOWNSEND: 1803-1878, Feb. 25; b. Sandy Hill, Washington co., N. Y.: merchant. He removed to New York 1817, was brought up in the drug business, and became the head of a large importing house. In the early part of his business career he began to take an active interest in the public school system. He was elected successively a school trustee, a member of the board of education, and twice its pres.; and 1847 secured a charter for the Free Acad., afterward the College of the City of New York, organized 1848. In the latter year he started on a long voyage of business and pleasure to the s. Pacific; 1854 was appointed U. S. consul at Ningpo, China; 1856 negotiated a treaty between the United States and Siam; 1856-61 was U. S. consul-gen. in Japan; and completed diplomatically the works of Com. Perry, securing the first treaty of trade and commerce 1858, and the opening of 3 ports to foreign residents 1859. Returning to the United States, he resumed his residence in New York, and re-

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mained there till his death. He was an incorporator of the American Soc. for the Prevention of Cruelty to Animals 1866, and of the American Museum of Natural History (in Central Park) 1869.

HARRIS, WILLIAM TORREY, LL.D.: educator: b. Killingly, Conn., 1835, Sep. 10. He studied at Phillips Andover Acad. and Yale College; removed to St. Louis and became a teacher there 1857, founder of the Philosophical Soc. 1866, founder and editor of *The Journal of Speculative Philosophy* 1866, and supt. of public schools 1867. In 1875 he was pres. of the International Education Assoc.; 1880 represented the U. S. Bureau of Education at the International Congress of Educators at Brussels; and 1889 became U. S. commissioner of education. He is author of numerous educational reports and papers, and editor (1889) of *Appleton's International Educational Series*.

HARRISBURG, hărr'is-bérg: city, cap. of Dauphin co., and of the state of Penn.; on the Susquehanna river, the Cumberland Valley, Northern Central, Penn., Philadelphia and Reading, and the Southern Penn. railroads, and the Penn. canal; 60 m. above the mouth of the river, 105 m. w. by n. of Philadelphia, 126 m. n. of Washington. The river at this point is 1 m. wide, has an island in the middle, is spanned by three railroad bridges and one foot and carriage bridge, and yields an abundant water supply. The city is laid out and built in harmony with the beauty of its surroundings, and is provided with ample police, fire, water, sewage, and gas and electric lighting service. The state-house, finished in 1822, a brick structure 180 ft. long by 80 ft. wide, with a circular Ionic portico in front, and a spacious rotunda surmounted by a dome, was destroyed by fire 1896, together with several buildings, similar in design, used by the various state depts. Other public buildings of note are the co. court-house; state arsenal; co. prison; the Penn. lunatic asylum; home for the friendless; city-hospital; market-houses; Masonic hall; and opera-house. The state capitol buildings were in a beautiful park comprising 10 acres of elevated ground, also containing a Mexican war monument. H. has an acad., 2 seminaries, about 100 public schools with nearly 10,000 pupils, 50 churches, of which the Meth. Episc., Presb., Bapt., and Lutheran are the most numerous, 3 national banks (cap. \$500,000), 2 state banks (cap. \$600,000), 2 private banks, 1 trust and safe-deposit com. (cap. \$250,000), 2 daily, 11 weekly, and several monthly publications. Its proximity to the great coal and iron regions of Penn., and its exceptional transportation facilities, have attracted large capital to it and given it wide fame as a manufacturing city. In 1900 it reported 446 mfg. establishments, using a capital of \$8,749,516, employing 7,862 hands, paying \$2,949,544 in wages, and yielding products valued at \$16,064,597. By 1895 the capital so employed had been advanced many thousands, and the industries comprised blast furnaces; rolling, saw, planing, and flour mills; Bessemer-steel works; boiler, machine, galvanized-iron cornice, railroad-car,

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steel-barrow, and marbleized-slate shops; hydraulic-cement pipe, carriage, coffin, cotton, and tile factories; and numerous smaller interests. H. is the seat of a Rom. Cath. bp. The site was settled by John Harris about 1726, and in 1733 he was in possession of 800 acres of land and a profitable Indian trading business. In 1755 the place became known as Harris's Ferry, because of the ferry across the Susquehanna river established by John Harris, Jr., under a grant by the Penns; in 1785 it was laid out as a town and named Louisbourg in honor of Louis XVI.; 1791 incorporated as a borough under its present name; 1812 made the cap. of the state: and 1860 received a city charter. Pop. (1860) 13,400; (1870) 23,104; (1880) 30,762; (1900) 50,167.

HAR'RISSON: town in Hudson co., N. J.; on the Passaic river opposite a part of Newark; on the Penn. and the Del. Lackawanna and Western railroads. It is connected with Newark by two railroad bridges and one wagon bridge, has a street railroad extending into Newark, is lighted with gas and electricity, and contains 4 churches, 4 machine-shops, branch of Newark thread works, 5 stone yards, large steel-works, brewery, shade-roller and linoleum factories, union school, fire dept., and water and sewage service. Pop. (1890) 8,338; (1900) 16,596.

HARRISON, hār'i-son, BENJAMIN: about 1740–1791, Apr.: b. Berkeley, Va.: signer of the Declaration of Independence. He was educated at William and Mary College, became a member of the house of burgesses and speaker 1764, 1777–82, opposed the stamp act resolutions 1765, was a delegate to congress 1774–77; introduced the resolution declaring the independence of the colonies, as chairman of the committee of the whole 1776, June 10; reported and signed the Declaration of Independence July; was gov. of Va. 1782–85, and opposed the ratification of the Federal constitution 1788.

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HARRISON, BENJAMIN, twenty-third President of the United States: b. North Bend, O., 1833, Aug. 20. He was a son of John Scott H., and grandson of Pres. William Henry H. who was third son of Benjamin H., a signer of the Declaration of Independence. He was brought up on his father's farm, spent two years at Farmer's College near Cincinnati, graduated at Miami Univ. 1852, was admitted to the bar, and settled in Indianapolis to practice 1854. In 1860 he was elected reporter of the Ind. supreme court, and while holding the office assisted in raising the 70th regt. of Ind. vols., of which he was appointed col. by Gov. Morton 1862. On taking the field the regt. was assigned to the right of Gen. William T. Ward's brigade and held the place to the close of the war. During the first 18 months of the service it was engaged in Ky. and Tenn., and its commander had no opportunity to distinguish himself. In 1864, Jan., he was assigned to the command of the brigade, and it was attached to the 1st div. of the 11th corps being subsequently incorporated with the 3d div. of the 20th corps under Gen. Hooker. Under the last transfer he took part in the campaign from Chattanooga to Atlanta, led his command in the battle of Resaca, 1864, May 14—where he captured the Confederate lines and 4 guns—and later in the capture of Cassville, the actions at New Hope Church and Golgotha Church, and the battles of Kenesaw Mountain and Peach Tree creek. His gallantry on these occasions induced Gen. Hooker to recommend to the sec. of war his promotion to brig.gen. In 1864, Sep.—Nov., he was on recruiting service in Ind., during the winter of 1864-5 in Tenn. with Gen. Thomas, in the spring 1865 resumed command of his brigade, and June 8 was mustered out of the service with the rank of brev.brig.gen. While absent in the field the office of supreme court reporter was declared vacant and a new reporter elected; but while at home recruiting he made a canvass of the state and was elected for a second term, on which he entered after being mustered out of the army. In 1868 he declined a third election and resumed practice, and then and 1872 made a large number of political speeches through the state. In 1876 he was tendered and declined the republican nomination for gov. of Ind., but on the withdrawal of Godlove S. Orth, the nominee, during the canvass, he consented to the use of his name. Though defeated by the democratic candidate, he developed unlooked for strength. He was appointed a member of the Mississippi river commission 1879, was chairman of the Ind. delegation in the national republican convention 1880, declined a cabinet appointment tendered by Pres. Garfield, and was elected U. S. senator for the term 1881, Mar. 4—1887, Mar. 3. In the senate he was regarded as a sound lawyer and able debater. He favored a judicious tariff reform, supported Senator Edmunds's civil service reform resolution, opposed Pres. Cleveland's pension vetoes, urged the improvement of the navy, and took a decided stand against the evil of foreigners acquiring large tracts of public and pri-

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vate lands to the exclusion of actual settlers. In 1884, he was delegate-at-large from Ind. to the Republican national convention, and in the convention of 1888 he received the presidential nomination on the 8th ballot. In the ensuing election he received a popular vote of 5,441,923 and an electoral vote of 233, against a popular vote for Cleveland of 5,536,524 and electoral 168. In 1892, June, he was renominated by his party by a vote of 535 $\frac{1}{4}$ to 183 $\frac{1}{8}$ for James G. Blaine, 179 for William McKinley, and 4 for Thomas B. Reed. He received a popular vote of 5,186,951 and an electoral vote of 145, against a popular vote of 5,553,142 and an electoral vote of 276 for Mr. Cleveland. In 1893 he became lecturer on constitutional law in the Leland Stanford, Jr., Univ. He died, 1901, Mar. 13.

HARRISON, CARTER HENRY: lawyer: b. Fayette co., Ky., 1825, Feb. 15. He was brought up on a farm, graduated at Yale College 1845, and at the law dept. of Transylvania Univ., Ky.; removed to Chicago and began practicing 1855, and subsequently abandoned law for real-estate operations. He was elected a co. commissioner 1871, member of congress 1874-76. and mayor of Chicago 1879, 1881, 83, 85, 93. He travelled extensively through foreign countries, and was presented with the freedom of the city of Dublin 1882. In 1893, Oct. 28, he was assassinated in the hallway of his own home by Patrick Eugene John Prendergast, a man who had worked in a very humble way for H.'s last election as mayor, and who was insanely importunate in demanding a municipal position. The son of Carter H. was elected mayor 1896, 1899, 1901, 1903.

HARRISON, CHARLES CUSTIS: an American educator; b. in Philadelphia, Pa., 1844, May 3; was graduated at the University of Pennsylvania in 1862; engaged in manufacturing 1863-92; became a trustee of the University of Penn. in 1876; acting provost, 1894, and provost, 1895. He made large gifts to univ., and was author of a series of annual reports, addresses, etc.

HARRISON, CONSTANCE (CARY): novelist; 1845, Apr. 25— ———; b. near Alexandria, Va. In 1867 the family removed to Richmond, and there she became the wife of Burton H., formerly private secretary to Jefferson Davis. About this time brief sketches and stories from her pen began to attract attention, but it was not until 1879 that the first of her several successful works appeared. This was *Goldenrod: An Idyll of Mount Desert*. In satire of 'society life' she wields a keen pen, but in a genial spirit.

HARRISON, FREDERICK: lawyer: b. London, Eng. land, 1831, Oct. 18. He was educated at King's College School, London; elected scholar of Wadham College, Oxford, 1848, and graduated 1853; was fellow and tutor there and studied law till 1858, when he was called to the bar; was sec. of the royal commission for the digest of the laws 1869-70; and was appointed prof. of jurisprudence and international law by the council of legal education 1877. He was a founder of the Positivist School 1870, and the Newton Hall 1881; has contributed largely to the

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Westminster, Fortnightly, and Contemporary Reviews, and the *Nineteenth Century*; and published *The Meaning of History* (1862), *Order and Progress* (1875), an English translation of vol. ii. of Comte's *Positive Polity* (1875), and *The Choice of Books, and Other Literary Pieces* (1886). He is considered the leading living exponent of the Positivist views.

HAR'RISON, JOHN: d. 1660, Oct.; b. England: soldier and regicide. As col. in the parliamentary army he had charge of the transfer of Charles I, from Hurst Castle to Windsor 1648, Dec. 19-23, and from Windsor to London for trial 1649, Jan. 19; was afterward appointed a maj.-gen. and member of a committee to frame a policy for the new govt.; attained great influence under Cromwell; became leader of the Anabaptists 1653; and was one of the parliamentary leaders who was put to death on the restoration of Charles II.

HAR'RISON, JOHN: mechanician: 1693-1776; b. Faulby, near Pontefract, Yorkshire, England. His mechanical genius early led him to study the construction of clocks and watches, with a view to diminishing as much as possible their errors and irregularities; and by 1726 he had effected considerable improvements. In 1714, the government had offered prizes of £10,000, £15,000, and £20,000 for the discovery of a method for determining the longitude within 60, 40, or 30 m. respectively. After repeated attempts, H. constructed a chronometer, which, in a voyage to Jamaica 1761-2, was found to determine the longitude within 18 m. he therefore claimed the reward of £20,000, which, after a delay caused by another voyage to Jamaica, and further trials, was awarded to him 1765—£10,000 to be paid on H.'s explaining the principle of construction of his chronometer, and £10,000 whenever it was ascertained that the instrument could be made by others. The success of H.'s chronometer is owing to his application of the *compensation curb* to the balance-wheel, and on the same principle he invented the *gridiron pendulum* for clocks. These, with his other inventions, the *going fusee* and the *remontoir escapement*, were considered the most remarkable improvements in the manufacture of watches of the last century (see HOROLOGY). H. always regretted his lack of early education. He died in London.

HAR'RISON, THOMAS ALEXANDER: painter: 1853, Jan. 17— ———; b. Philadelphia, Pa. He studied under Gerôme, at the École des Beaux-Arts, Paris; won a first-class medal at the Paris exposition 1889; was knighted in the Legion of Honor; and won a medal in the Munich exposition 1890. He excels in marine and figure painting, though he occasionally chooses landscape. He is a member of the Society of American Artists, New York. Among his noted paintings are *Gloaming* and *Castles in Spain*.

HAR'RISON, WILLIAM HENRY, ninth President of the United States: 1773, Feb. 9—1841, Apr. 4; b. Berkeley, Charles co., Va.; son of Gov. Benjamin H. (1740-91), who signed the Declaration of Independence. On the death of

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his father, he joined, 1792, as ensign, the army which Wayne was leading against the n.w. Indians. He left the army 1797, being appointed sec. of the N.W. Territory. In 1801, he became gov. of the new territory of Indiana, having, as the representative of the whole N.W. Territory in congress, procured the passing of a law relating to the sale of the federal land in small parcels, to which the western states ascribe a large share of their prosperity. In the war against the Indians, 1811, which soon became a war also against the English in Canada, H., as maj.gen. and commander of the n.w. army, showed great military talent. He defeated the Indians in an important battle at Tippecanoe, and, by the victory of Commodore Perry on Lake Erie, was enabled to pursue the British invaders into Canada, where, 1813, Oct. 5, he totally routed them in the battle of the Thames. In 1814, he resigned his commission. In 1816, he was elected to congress, 1819 member of the Ohio senate, in 1824 U. S. senator. In 1828, he went as ambassador to Colombia, but was recalled in 1829, and for 12 years was clerk of a county court in Ohio. The whig party nominated him for president of the United States 1836, but failed to elect him. At the next election, 1840, he was renominated and defeated his previous competitor, Van Buren, by an overwhelming majority. The Harrison campaign is memorable for its enthusiasm and the novelty of its political methods. He died only one month after his inauguration. He published, Cincinnati 1838, *A Discourse on the Aborigines of the Ohio Valley*.

HARROGATE, or **HARROWGATE**, *här'ō-gāt*, or **HIGH HARROWGATE**: village in Yorkshire, 20 m. w. of York, England; celebrated for sulphurous and chalybeate springs. The sulphurous springs are also saline, and of laxative and diuretic quality, while the chalybeate waters are tonic. H. is a very agreeable residence, the surrounding country being full of beauty and interest; it is largely frequented by visitors in summer, and has of late rapidly increased in size. The waters are of considerable activity, and should be taken only under medical advice. They are used both externally and internally, and are in great repute in many diseases of the skin, and in some dyspeptic disorders, scrofula, gout, etc. H. springs were discovered 1571. A local report on their virtues, with analyses in detail, by Prof. Hoffman, was published 1854.—Pop. (1871) 6,843; (1881) 9,482; (1891) 13,917.

HARROW, v. *här'rō* [OF. *harau*, a cry of distress; *harauder*, to utter a cry of distress or pain: Bret. *harao*, a cry when one is hooted]: to distress acutely; to lacerate, as the feelings; to harass. **HAR'ROWING**, imp.: **ADJ.** acutely distressing; lacerating. **HAR'ROWED**, pp. *-rōd*, distressed. **HAR'ROWINGLY**, ad. *-lī*. **HAR'ROW**, int., in *OE.*, exclamation of sudden distress or pain; a cry for assistance.

HARROW, n. *här'rō* [Dan. *harv*; Icel. *herfi*, a harrow; Fin. *hara*, a brush-harrow made of pine-tree branches; *harawa*, a hay-rake]: agricultural implement consisting of cross-bars and spikes, drawn over plowed land to level

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it and break the clods or lumps of earth: V to break or tear with a harrow. HAR'ROWING, imp.: N. the act or process of drawing a harrow over plowed land. HAR'ROWED, pp. -rōd. HAR'ROWER, n. -ēr, one who.—A *har-row* is an agricultural implement for loosening and pulverizing the surface soil; used to prepare recently-plowed land for seeding, to cover the seed of grain crops, and sometimes to destroy weeds among cultivated plants. It was one of the earliest instruments used in cultivation, and is represented in many ancient sculptures. In its original form, the H. was very rude, and its improvement was long delayed. As late as the second quarter of the present century, most of the harrows in use upon the farms in this country were very heavy and inefficient implements. The frames were triangular, and the teeth were straight and long. Lighter frames and a square form were gradually adopted. The teeth were prevented from following each other by attaching the draft chain near one corner, thus giving it a diagonal position when in use. The labor of the team was lightened, and the value of the implement was increased. The frame was sometimes made in two sections, in order that it might be more easily handled, but the general character of the implement remained the same.

No marked change in construction was adopted until about 1857, when Share's Coulter H., working on an entirely new principle, was introduced. In this implement thin blades, quite wide and sloping backward, were used instead of teeth. This form combined the advantages of light draft, freedom from clogging, and a thorough cutting and fining of the surface soil. It proved of special value in preparing inverted sod land for planting or seeding. It was soon followed by the Wheel, or Disk H., by which the surface soil was cut by the sharp rims of steel wheels which were used instead of teeth. The frame was in the form of a triangle, and the disks were made slightly concave, that they might more thoroughly pulverize the soil. It was very efficient, but the draft was heavy and the bearings were subject to rapid wear. Another objection was found in the fact that by repeated harrowings the land was left in ridges. Improvements have been made by which the angle of the disks can be adjusted, and the principal difficulties with the older styles have been obviated. Another form is the Spring-tooth H., in which curved springs are used instead of teeth or disks. The Rotary H. has a square frame, with straight teeth. The draft is from the centre, and a weight is so arranged that the teeth on one side will enter the ground more deeply than those on the other side, and thus give the H. a rotary motion. A later and remarkably efficient invention is the Acme H., with which, by means of sets of curved steel blades, the ground is rapidly and finely pulverized, the depth of working being easily adjusted by means of levers. The Thomas Smoothing H. is invaluable for fining the surface, covering grain, and destroying weeds on recently-planted land. Its teeth, about twice as many as in the

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common form, are round, and slope backward and to one side. The draft is so arranged that the frame moves diagonally, and the teeth do not follow each other. The draft is light and the H. does not clog.

HARROW-ON-THE-HILL: village of Middlesex, England, finely situated on the summit of a small eminence about 12 m. n.w. of London. Pop. (1871) 4,997; (1891) 5,725. The village derives celebrity solely from the grammar-school founded here, 1571, by John Lyon, a wealthy yeoman of the parish, and attended by above 500 pupils. The school was originally intended to afford a gratuitous education to poor boys belonging to the parish, and is still nominally free to all the boys of the parish, but, as in many other cases, it has been diverted from its primary purpose, and is now attended chiefly by the sons of the nobility and gentry, and has a very high reputation. The instruction is modelled generally after that of Eton: originally purely classical, it now comprises also mathematics, modern languages, English literature, science, music, and drawing. It has several exhibitions to Oxford and Cambridge. Among the eminent men who have been educated at H. are Sir William Jones, Dr. Parr, Lord Byron, George Canning, Sheridan, Lord Palmerston, the Earl of Shaftesbury, Sir Robert Peel, and Abp. Trench.

HARRY, v. *hǃr'rǃ* [Scot. *herry*, to rob: AS *hergian*, to plunder: Icel. *heria*, to make an inroad on: comp. Icel. *herr*; Dan. *hær*; Ger. *heer*, a host, an army]: to plunder; to strip; to pillage; to handle roughly; to tease. **HARRY-ING**, imp. **HARRIED**, pp. *-rǃd*; also formerly written *harow*: see **HARROW** 1.

HARRY, *hǃr'ǃ*, **BLIND**, or **HENRY THE MINSTREL**: Scottish minstrel of the 15th c. Scarcely anything is known of his life beyond what is told by Dr. John Major (or Mair) in his *History of Scotland*, 1521. 'When I was a child,' he says, 'Henry, a man blind from his birth, who lived by telling tales before princes and peers, wrote a whole book of William Wallace, weaving the common stories (which I, for one, only partly believe) into vernacular poetry, in which he was skilled' In 1490-92, Blind Harry is found at the court of King James IV., receiving occasional gratuities of five, nine, and eighteen shillings. The poem attributed to him, *The Life of that Noble Champion of Scotland, Sir William Wallace, Knight*, was completed before the end of 1488, when it was copied by John Ramsay. This copy, the oldest ms. of the work now known to exist, does not ascribe it to Blind Harry, nor is his name given to it in the earlier printed editions. The poem, which contains 11,861 lines of ten syllables each, is written in rhyming couplets. The language is frequently obscure, sometimes unintelligible, but the work as a whole has some vigor; in some passages it even kindles into poetry; and it is altogether a surprising performance, if we receive it as the composition of one born blind. It has no claim to be regarded as history; it is full of gross

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mistakes or misrepresentations of well-known facts; and it can be viewed only as an embodiment of the sanguinary legends which two centuries had gathered.

HARRY-SOPH, n. *här-rī-sōf'* [corruption of Gr. *erisophos*, very wise—from *eri*, a particle, very; *sophos*, wise]: at Cambridge, a name formerly applied to those students who, having attained sufficient standing to take the degree of B.A., declared themselves candidates for degrees in law or physic.

HARSH, n. *hārsh* [Ger. *harsch*, rough: Dan. *harsk*, rancid: Scot. *harsk*, harsh, rough]: rigorous; rudely or unjustly severe; jarring; discordant; morose. **HARSH'LY**, ad. *lī*, in a harsh manner; with violence; morosely; unpleasantly to the ear. **HARSH'NESS**, n. roughness to the touch, in manners, or in words.—**SYN.** of 'harsh': rough; sour; austere; crabbed; peevish; unpleasing; vigorous; acrimonious; stern; tart;—of 'harshness': acrimony; tartness; asperity.

HART, ALBERT BUSHNELL: an American educator; b. in Clarksville, Pa., 1854, July 1; was graduated at Harvard University in 1880; and became professor of history there. His publications include *Introduction to the Study of Federal Government*; *Epoch Maps*; *Formation of the Union*; *Practical Essays on American Government*; *Revised Suggestions on the History and Government of the United States*; *Studies in American Education*; *Coercive Powers of the United States Government*; *Guide to the Study of American History* (with Edward Channing); *Life of Salmon Portland Chase*. He was also editor of *Epochs of American History* (1891-96); *American History Told by Contemporaries* (1898-1901); *American Citizen Series*; *Source Book of American History*; and joint editor of *American History Leaflets*; *Harvard Graduates' Magazine*; and the *Historical Review*, etc.

HART, n. *hárt* [AS. *heort*; Icel. *hiortr*; Ger. *hirsch*, a stag]: a stag or male of the red deer, from the age of six years, when the crown or *surroyal* of the antler begins to appear (see **STAG**). **HART'BEEST**, n. *-bēst* [Dut.]: a kind of stag or antelope found in s. Africa (see **KAAMA**). **HARTWORT**, n. *-wért*, an *umbelliferous* plant, the *Tordylium maximum*. **HARTSHORN**, n. *hárts'hörn*, the horn of the hart; in pharmacy, the antlers of the *Cervus elaphus*; in composition very different from that of persistent horns, as of the ox, and identical, or nearly so, with that of bone. The products of its distillation were formerly much used in medicine, under the titles of oil of hartshorn, volatile salt of hartshorn, spirits of hartshorn, etc.; but they are now replaced by simpler preparations of the active ingredients of these substances: see **AMMONIA**.

HART, *hárt*, JAMES McDUGAL: painter: b. Kilmarnock, Scotland, 1828, Dec. He came to the United States with his parents when a child, was apprenticed to a coach-painter in Albany, N. Y.; studied landscape painting with Schirmer in Düsseldorf 1851-2, had a studio in Albany 1852-57, removed to New York 1857, and became a member of the National Acad. of Design 1859. His works are largely

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pastoral in character, include *Cattle Going Home* and *Moon-rise in the Adirondacks* (1871), *In the Orchard* (1874), *Landscape, Road and Cattle* (1875), *A Misty Morning*, Centennial exhibit (1876), *Indian Summer*, Paris exhibit (1878), *Princess Lily* (1882), *Boughs for Christmas* (1884), *At the Watering-Trough* (1885), *Three Little Maids*, and *On the North Shore* (1886).

HART, JOEL T.: 1810–1877, Mar. 1; b. Clark co., Ky.: sculptor. He learned the mason's trade, educated himself, and while working as a stone-cutter at Lexington began modelling busts in clay. He soon attained a phenomenal success in portrait-busts, and on receiving a commission for a marble statue of Henry Clay from the Ladies' Clay Assoc. of Richmond, Va., 1849, went to Florence, Italy, to study and work. Beside the marble statue of Clay for Richmond, he made one of the statesman in bronze for New Orleans, and another in marble for Louisville. He executed many busts and statues of eminent men during his 28 years' residence in Florence, and, among ideal pieces, *Angelina*, *Il Penseroso*, and *Woman Triumphant*. His remains were removed from Florence to Lexington, Ky., 1884, where the state erected a monument over them.

HART, JOHN: 1708–1780; b. Hopewell tp., N. J.: signer of the Declaration of Independence. He was brought up on a farm, served several terms in the provincial legislature, was a member of the continental congress, 1774–77, and chairman of the N. J. council of safety 1777–8, had his farm and stock destroyed and was obliged to flee with his family on the British invasion of the state, and was not free from persecution till after the British defeats at Trenton and Princeton. His character was singularly pure and simple.

HART, NANCY: about 1755–1840; b. Elbert co., Ga.: revolutionary heroine. She was zealous in supporting the patriotic cause, incurred the fear of the tories by many acts of daring, and particularly distinguished herself by overcoming a party of 5 straggling British soldiers from the Augusta camp, who visited her cabin for violence and plunder. She shot one dead, killed a second while attempting to escape, and held the others as prisoners till help arrived. Hart co., Ga., was named in her honor.

HART, SOLOMON ALEXANDER, R.A.: 1806, Apr.—1881, June 11; b. Plymouth, Devonshire, England, of Jewish origin: painter. He entered the Royal Acad., London, 1823. Among his works are—*The Elevation of the Law* (1830); *Isaac of York* (1830); *Eleanor Sucking the Poison from Edward's Arm*; *Milton Visiting Galileo in Prison* (1847); *The Three Inventors of Printing* (1852); *Lady Jane Grey* (1860). In 1840, H. became R.A.; 1854, professor of painting; 1865, librarian of the Royal Academy.

HART, WILLIAM: painter: b. Paisley, Scotland, 1823, Mar. 31; brother of JAMES McDUGAL H. He accompanied his parents to Albany, N. Y., when a child, was apprenticed with his brother to a coach-maker, and like him executed his first art work on carriage panels and decorations. In 1848 he first exhibited paintings on canvas at the

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National Acad. of Design; 1850-53 travelled and studied in Europe, 1854 opened a studio in New York, 1855 was elected an associate of the National Acad., and 1858 an academician. He was the first pres. of the Brooklyn Acad. of Design, a founder of the American Soc. of Water-color Artists, and its pres. 1870-73. His works include *Autumn in the Woods of Maine* (1867), *Scene on the Peabody River*, water color (1868), *Twilight on the Brook* (1869), *Goshen, N. H.*, water color, and *A Brook Study* (1870), *The Golden Hour* (1872), *Morning in the Clouds* (1874), *Keene Valley* (1875), *Cattle Scenes* (1876), *Scene on Nepanock Creek* (1884), *A Modern Cinderella* (1885), etc. He d. 1894, June 17.

HARTE, *hârt*, FRANCIS BRET: American author of original power; b. Albany, N. Y., 1839, Aug. 25. His father, a teacher, died while H. was very young. In 1854, H. went to California, where he was successively employed in gold-mining, in keeping a school, and as a compositor. About 1857, he began to contribute sketches of Californian life to one of the San Francisco newspapers, the *Golden Era*, and was soon promoted to the editorial staff, and not long afterward became editor of the weekly *Californian*. In 1864-70, H. was sec. of the U. S. branch mint in San Francisco. Several of his poems published during this period were widely copied and admired, 'The Society upon the Stanislaus,' 'The Pleiocene Skull.' But the unmistakable first-fruits of his genius were the contributions to the *Overland Monthly*, a magazine started under his editorship 1868. *The Luck of Roaring Camp*, a sketch of rough mining life, was followed by *The Outcasts of Poker Flat*; and the striking originality of both sketches established his reputation, which was increased by a short satirical poem known as the *Heathen Chinee*. For a time he held the professorship of recent literature in the Univ. of California; but in 1871 he went to the eastern states, settling first in New York, then in Boston. He was appointed U. S. consul at Crefeld, Prussia, 1878; and at Glasgow 1880. He has been a frequent contributor to the *Atlantic Monthly*. A uniform edition of his works was issued in London, 6 vols. (1879). His separate works regularly reprinted in Great Britain and on the continent, include: *Condensed Novels* (1867, 71); *Poems*, (1871); *Luck of Roaring Camp and Other Sketches* (1871); *East and West Poems* (1871); *Poetical Works* (1871); *Mrs. Scagg's Husbands* (1872); *Tales of the Argonauts and Other Stories* (1875); *Thankful Blossom* (1876); *Two Men of Sandy Bar* (1876); *The Story of a Mine* (1877); *Drift from Two Shores* (1878); *Echoes of the Foot Hills* (1879); *The Twins of Table Mountain* (1879); *Flip and Froud at Blazing Star* (1882); *In the Carquinez Woods* (1883); *On the Frontier* (1884); *By Shore and Sedge* (1885); *Maruja, a Novel* (1885); *Snow-bound at Eagle's* (1886); *A Millionaire of Rough and Ready* (1887); *The Crusade of the Excelsior* (1887); and *A Phyllis of the Sierras* (1888). He died, 1902, May 5.

HARTEBEEST: see KAAMA.

HARTFORD.

HARTFORD, *hârt'ford*: city, cap. of Hartford co. and of the state of Conn.; at the head of steamboat and sloop navigation on the Conn. river, 50 m. n. of its mouth; on the New York New Haven and H. railroad, e. terminus of the H. and Conn. Western railroad, n. terminus of the H. and Conn. Valley railroad, and on the New York and New England railroad; lat. $41^{\circ} 45' 59''$ n., long. $72^{\circ} 40' 45''$; 36 m. n.n.e. of New Haven, 111 m. n.e. of New York, 124 m. w.s.w. of Boston; area 10 sq. m. H. is one of the most attractive cities in New England, is about $3\frac{1}{2}$ m. long and 3 m. wide, is intersected by Park river, which is spanned by 11 bridges, and is connected with E. Hartford on the opposite side of the Conn. river, by a bridge 1,000 ft. long. It occupies an elevated site; is compactly built, its business portion mostly of brick, iron, granite, and free-stone; has many beautiful suburban residences, and is laid out in generally broad, straight streets, a part running parallel with the river, the others intersecting them at right angles and extending e. and w. The principal business streets are Main, State, Commerce, and Asylum. Park river almost encircles an area of 46 acres which has been converted into a beautiful pleasure resort bearing the name Bushnell Park, in honor of the Rev. Horace Bushnell, D.D. (q.v.), who suggested the reclamation of the tract for a public park; and containing the magnificent new capitol, and life-size statues of Gen. Israel Putnam, of Bp. Thomas Church Brownell, founder of Trinity College, and of Horace Wells, M.D., discoverer of anæsthesia. The city and its immediate vicinity have many beautiful drives and promenades, the most popular of the former being to Tumble-down Brook, 8 m. distant on the Albany road; Talcott Mountain, 9 m. w., where Wadsworth's Tower affords a delightful and varied view; Trout-brook Reservoir, on the Farmington road; Prospect Hill; Wethersfield, 4 m. s.; and E. Hartford, by the long bridge. The two last places contain many very old and quaint buildings.

The public buildings include the new capitol on Bushnell Park, of white marble, in the secular Gothic style, cost \$2,500,000; the state house, built of brick 1794, containing the original charter granted the colonists by Charles II. and secreted from Gov. Gen. Andros in the oak tree 1687, framed in the wood of the historical tree, portraits of the colonial and state governors, and the state library; the city hall, a handsome Grecian building on Kingsley street; U. S. govt. building; Union railroad depot; state arsenal, and opera house. The chief educational buildings are those of Trinity College (Prot. Episc.), founded under the name of Washington College 1823, formerly occupying the site of the new capitol, but now in the s. part of the city; the H. Theol. Institute (Congl.), founded at East Windsor 1834; the H. High and Grammar School founded 1855; the H. Female Seminary; a popular school for young ladies; 2 nunneries and 2 free Rom. Cath. schools; and many public schools. The high school building cost \$240,000, one of the public schools with land \$185,000, and another \$150,000. Of the numerous libraries that Trinity College contained (1902)

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43,000 vols.; H. Theol. Institute 74,000; Watkinson lib. of reference about 35,400; H. public 33,000; Conn. Hist. Soc. 22,000; Conn. State 16,000; legal, medical and educational a smaller number. Watkinson, H., and Hist. Soc. libraries, rooms of Hist. Soc. with their treasures of relics and records, and a gallery of noted paintings, are in the granite Wadsworth Athenæum building on Main street. The ecclesiastical buildings include 2 Advent churches, 6 Bapt., 12 Congl., 9 Prot. Episc., 6 Meth. Episc., 4 Rom. Cath., 2 German Lutheran, 2 Hebrew, and 1 Presb., Cath. Apostolic, Unitarian, and Universalist. H. is the seat of a Rom. Cath. bp. and contains the cathedral of the diocese. The Church of the Good Shepherd (Prot. Episc.) erected by Mrs. Samuel Colt, Christ Church (Prot. Episc.), Park and Pearl Street Churches (Congl.), South Baptist, First Methodist, and St. Patrick's Cathedral (Rom. Cath.), are among the most beautiful and costly church edifices. The charitable buildings comprise the American Asylum for the Deaf and Dumb (founded 1816), the oldest institution of its kind in America; Retreat for the Insane; H. Hospital; H. Orphan Asylum; Old Man's Home; Women's Christian Assoc.: and Union for Home Work.

In 1900 H. reported 888 mfg. establishments, using a capital of \$30,500,047, employing 13,363 hands, and yielding products valued at \$31,145,715. This interest has been extended since, and several millions of H. capital are now invested in industrial works outside the city. The chief industries are the manufacture of fire-arms, Gatling-guns, steam-engines, boilers, sewing-machines, edge-tools, carpet, linen, silk, envelopes, carriages, water and car-wheels, silver-plated ware, and hardware, beside saw and flour-mills, marble-works, railroad car and repair-shops, printing, lithographing, and book-publishing establishments. Aggregate cap. of local corporations was about \$40,000,000. Statistics give the cap. of 7 fire-insurance companies as \$10,500,000 with \$23,733,325 assets; 8 life-insurance \$2,400,000 with \$109,059,616 assets; 8 nat. banks \$5,375,000; 3 trust companies \$800,000; 3 state banks \$750,000; and deposits in 4 savings banks \$13,289,000. H. is the centre of the leaf-tobacco trade of the Conn. river valley. Beside its railroad connections, it has a daily steamboat line to New York, freight lines to Philadelphia, Baltimore, and Albany, and about 200 sailing craft engaged in coasting trade.

The site of H.—called by the Indians *Suckiang*—was permanently settled by emigrants from e. Mass. 1635, and first named Newtown. They found the Dutch in possession of a fort (erected 1633) at the junction of the Conn. and Park rivers. In 1637 the name was changed to Hartford, as a compliment to the Rev. Samuel Stone, one of the first pastors of the settlement, who was born in Hartford, England. The first court in Conn. convened there 1636, the first constitution was framed 1639, Jan., and the first assembly under it met 1639, May. Farmington was settled by emigrants from H. 1645, Middletown and Norwalk 1650, and Hadley, Mass. 1659. In 1654 the gen. court dispossessed

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the Dutch at the fort; 1687 the Charles II. charter was saved from Gov. Gen. Andros by a timely strategy on the part of Capt. Joseph Wadsworth; 1775 a committee planned the expedition which captured Ticonderoga and Crown Point before the expedition authorized by congress started (see ALLEN ETHAN; ARNOLD, BENEDICT; GREEN MOUNTAIN BOYS); 1784 the city was incorporated; 1665-1701 the legislature met in H.; 1701-1818 it held one session in H. and one in New Haven annually; 1819-75 it held an annual session in the two capitals alternately; and since 1875 H. has been the sole capital. The famous convention of New England delegates (federalists) to protest against the war with England and other measures of the administration, was held here 1814, Dec. 15-1815, Jan. 5. (see HARTFORD CONVENTION; also CONNECTICUT; *History*), Pop. (1800) 5,347; (1810) 6,003; (1820) 6,909; (1830) 9,789; (1840) 12,793; (1850) 17,966; (1860) 29,152; (1870) 37,743; (1880) 42,015; (1890) 53,230; (1900) 79,850.

HARTFORD CONVENTION, in the Political History of the United States: assemblage of delegates from the New England states, at Hartford, 1814, Dec. 15. This convention was proposed by the Massachusetts legislature. On the outbreak of the war with Great Britain 1812, the democratic party favored France, while the federalists inclined toward the side of England. As the war destroyed commerce and the fisheries, the chief interests of New England, which was also federalist in politics, there was disapproval of it in New England. The governors of these states protested that while their people were drafted into the army by conscription, their own coasts were left exposed and undefended. The ostensible object of the convention was to devise means of security and defense against British invasion. It sat 20 days with closed doors; and as it had been charged by political antagonists that its objects were treasonable, it was watched by a military officer of the government. George Cabot, of Mass., was chosen president: the total number of delegates was but 25; 12 from Mass., 7 from Conn., 3 from R. I., 2 from N. H., 1 from Vt. The convention, at rising, proposed certain amendments to the U. S. constitution—free (excluding slave) population as the basis of representation, a single term for the presidency, exclusion of foreigners from office, limitation of embargoes to 60 days, and requirement of a two-thirds vote in congress for admission of new states and for declaring war, etc. Certainly no treasonable act was committed, and doubtless no treasonable intention was entertained; yet the federalist party, whose great leader had been George Washington, never recovered from the odium of opposition to the government, and 'Hartford Convention Federalist' was long a term of reproach.

HARTINGTON, *hár'ting-ton*, SPENCER COMPTON CAVENDISH, LL.D., Marquis of: statesman: b. England, 1833, July 23; son of William, 7th Duke of Devonshire. He graduated at Trinity College, Cambridge, 1854, accompanied Earl Granville to Russia 1856, was elected to parlia-

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ment as a liberal 1857, became a lord of the admiralty and under sec. of state for war 1863, was sec. of state for war 1866, Feb.—July, postmaster-gen. in Gladstone's cabinet 1868, Dec.—1871, Jan.; then became chief sec. for Ireland, and 1875, Feb, was chosen leader of the liberal party in the commons. 1879, Jan. 31 he was installed lord rector of Edinburgh Univ., 1880 declined the queen's request to form a cabinet, 1880, May—1882, Dec. 16, was sec. of state for India under Gladstone, and 1882, Dec.—1885, June, sec. of state for war. In 1886 he declined to enter Gladstone's Home Rule cabinet and became leader of the unionist-liberals. He received his degree from Trinity College, Cambridge, 1862.

HARTITE, n. *hâr'tīt*: a fossil resin found in the brown coal of lower Austria.

HARTLEPOOL, *hâr'tl-pól*: municipal and parliamentary borough, seaport, and market-town of England, county of Durham, on a small peninsula, n. of the estuary of the Tees, 20 m. e.s.e. of Durham. It consists of one principal and several smaller streets, and was formerly surrounded by walls. The harbor is safe and easily accessible; extensive docks have been constructed. Fishing is here carried on with success. H. formerly attracted many visitors for sea-bathing during the summer months; but since its recent commercial revival, owing to the formation of railways connecting it with the coal-mines of Durham, it is no longer visited for that purpose. In 1880 (including West H.), 4,314 vessels of 916,181 tons, entered, and 4,380, of 960,737 tons, cleared the port. In 1901 the total tonnage entered and cleared, excluding those coastwise, was 881,978. The trade is chiefly in coal. As one of the Hartle-pools, it joins in sending 1 member to parliament. Pop. of municipal borough (1881) 17,002; (1891) 21,521.

HARTLEPOOL, WEST: modern market-town and seaport of England, county of Durham, on the s. as Hartlepool is on the n. of Hartlepool Bay, practically forming one town with Hartlepool, but within the township of Stranton. It has sprung into existence within recent years, having been founded 1847 by the late Ralph Ward Jackson, enterprising railway speculator. It consists of one principal and several diverging streets, and possesses a large and handsome Gothic church, several large hotels and dissenting chapels, a theatre, athenæum, and mechanics' institute, custom house, market-house, exchange, a school of art, and other public buildings. The first harbor was constructed here 1847, of 12 acres, and has since been greatly enlarged. The dock area of H. and West H. together was 86 acres in 1880; but including the timber and ship-building yards, etc., the area covered was about 300 acres. There are also large graving-docks, timber-ponds, and about 3 m. of quays. Besides coal, the following are the principal imports: Flax and hemp, grain, timber, butter, cheese, fruit, cattle, tallow, yeast, iron, zinc, etc.; the exports consisting of woollen, cotton goods, copper, cement, drugs, machinery, earthenware, yarn, hides, etc.: the trade being carried on

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for the most part with the Baltic ports, Cronstadt, St. Petersburg, and Danzig, and with Hamburg and Rotterdam. The export of coal from the united port is about 1,500,000 tons annually. In 1880, 534,031 tons were exported coastwise, and 553,268 to foreign ports. Iron ship-building is carried on here; in 1880, 18 steam-vessels, of 18,749 tons, were built here. There are large iron-foundries, cement-works, locomotive engine and boiler-works, mast and block lofts, saw-mills, tile-works, and brick-fields. The Hartlepool boroughs consist of Hartlepool, West H., Throston, Stranton, and Seaton Carew, and send one representative to the house of commons. Pop. (1881) 28,167; (1891) 42,492.

HARTLEY, *hârt'li*, DAVID, mental philosopher, founder of the English 'Associationist' school in psychology: 1705, Aug. 30—1757, Aug. 25; son of the vicar of Armley, Yorkshire. At the age of 15, he entered Jesus' College, Cambridge, and became a fellow of the college. He studied at first for the Anglican priesthood, but his independent thinking led him to dissent from some points in the Thirty-nine Articles, and he abandoned his original intention. Though in his mature years he impugned eternal punishment, maintaining the ultimate restoration of all men, his published opinions coincided with the Church of England, in which he continued to the last a member. He finally chose the profession of medicine; in which he attained eminence, practicing successively at Newark, Bury St. Edmunds, in London, and at Bath, where he died.

His work, *Observations on Man* (1749), on which his fame rests, was begun when he was about 25, and occupied his thoughts for 16 years. The first part relates to the constitution of the human mind, and is the really important and original part. The second part treats of religion and morals. His treatment turns throughout on two theories or hypotheses, of very different merits, and not necessarily conjoined, though never separated in his mind. The first is called the Doctrine of Vibrations, or a theory of nervous action analogous to the propagation of sound, the suggestion of which he owed to Newton, of whose writings he was a devoted student. His second and most valuable innovation consisted in showing that the faculties, powers, and feelings of the mind might be explained to a very wide extent by the principle of the association of ideas (see ASSOCIATION OF IDEAS), a principle far from new, but never before appreciated in the range of its bearings upon the phenomena of mind.

The doctrine of vibrations supposed that when any one of the senses is affected by an outward object, the effect was to set the particles of the nerve in a vibratory motion, which ran along to the brain, and produced corresponding vibrations in the cerebral substance. In like manner, when an active impulse proceeded outward to the muscles, the manner of communication along the nerve was of the same kind. H. even extended these molecular vibrations to the other tissues. As a hypothesis, this assumption was so far legitimate, if it served to explain the facts, or even to im-

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agine in a probable way what goes on in the substance of the nerves and brain during the processes of sensation, thought, and volition. The general distaste for this part of H.'s speculations arose from a mistaken notion of its favoring materialism. Not only was the author not a materialist—being most express in affirming a spiritual entity different from the body—but his views had nothing more of materialism in them than the views that mankind have always held as to the connection of mind with bodily actions. In the free-will controversy he was a determinist. As regards the second doctrine of H., the doctrine of association, he was certainly the first to do justice to the applications of that principle to explain the phenomena of the mind. He points out how it is involved in the conversion of our sensations into ideas, throughout all the senses, also in the origin of voluntary power, which he truly regards as essentially an acquired power. He then treats of the commonly recognized intellectual faculties,—Memory, Imagination, Reason, etc.—showing how widely the process of association pervades them all. Lastly, the Emotions, which he classifies under six heads—Imaginative Emotions, Ambition, Self-interest, Sympathy, Theopathy (the religious sentiment), and the Moral Sense—may be readily seen to be, in many instances, the products of association.

HARTLEY, JONATHAN SCOTT: an American sculptor; b. in Albany, N. Y., 1845, Sept. 23; was educated at Albany Academy; early engaged in sculpture. His work includes the Daguerre monument, Washington; Ericsson monument, New York; statue of Miles Morgan, Springfield, Mass.; statue of Alfred the Great, New Appellate Court Building, New York; statue of Thomas K. Beecher, Elmira, N. Y., and many other public pieces. He was a member of the National Academy of Design; National Sculpture Society; Society of American Artists; Architectural League; and President of the Art Students' League.

HARTMANN, *hârt'mân*, EDUARD VON: German philosopher: b. Berlin, 1840, Feb. 23. He was educated in the Berlin Gymnasium and the Royal School of Artillery, became an officer in the army 1861, and after serving a year met with an accident from the effects of which he was almost wholly confined to his bed afterward. In this condition he applied himself to literary pursuits, published several poetical productions, and attracted wide attention in the world of philosophy by his *Ueber die dialektische Methode* (1868), *Schelling's Positive Philosophie* (1869), *Das Ding an sich und seine Beschaffenheit* (1871), and, chief of all, *Philosophie des Unbewussten* (1869, 5th ed. 1873). Subsequently he published *Die Selbstzersetzung des Christenthums und die Religion der Zukunft* (1874), and *Kritische Grundlegung des Realismus* (1875). In his chief work he seeks to corroborate philosophy by the inductions of physical science, and affirms that the first principles are to be found in the unconscious, which is active in the instincts, love, emotions, formation of language, thought, etc. In detail he argues that the unconscious in nature has both a will and an idea, not the

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blind will of Schopenhauer nor the logical idea of Hegel; but a will that can determine itself to prototypal ideas, and an idea that can grasp reality by the action of will.

HARTMANN VON DER AUE, *hârt'mân fon dër ow'eh*, or VON AUE: Swabian knight, one of the old German poets; b. about 1170, d. between 1207 and 20. He had probably begun the study of grammar, knew French when he joined the Crusade 1197, and, as he himself says, could obtain, by his own reading, material for his narrative poems. Of these the first was *Erec* (the legend reproduced in Enid of Tennyson's *Idylls of the King*), written shortly before 1197, and edited by Haupt (1839); the last was *Iwein*, written before 1204, and edited by Benecke and Lachmann (1827, 2d ed. 1843); with a dictionary by Benecke (1833). Both of these are drawn from the Arthurian cycle of legends; and their natural development of events shows better mastery of their material than the more incoherent British narratives which form their basis. Between the composition of these two poems, H. wrote the religious legends *Gregor auf dem Steine* (ed. by Lachmann, 1838), read in churches till the 16th c., and *Der arme Heinrich* (Longfellow's *Golden Legend*), edited by W. Müller (1842), also with H.'s *Lieder und Buchlein*, by Haupt (1842). All these works have been translated into modern German.

HARTOGIA: genus of trees, or shrubs, of nat. ord. *Celestraceæ*. *H. Capensis*, native of the Cape of Good Hope, is only 10 or 15 ft. high, but the trunk is 12 to 18 inches in diameter. The wood is hard, fine-grained, close, and tough; it is much valued, and, when polished, is superior to the finest mahogany, and is often used for veneering. The Dutch colonists call it *Ladlewood*, probably from one of the first uses to which they found it convenient to apply it.

HARTRANFT, *hâr'tranft*, JOHN FREDERICK: 1830, Dec. 16—1889, Oct. 17; b. New Hanover, Penn.: soldier. He was admitted to the bar 1859; served the first 3 months of the civil war as col. of the 4th Penn. vols.; was in the first battle of Bull Run; on the staff of Gen. William B. Franklin; raised the 51st Penn. vols.; and was appointed col. 1861, July 27. He accompanied the Burnside expedition to N. C.; led the attack on Roanoke Island 1862, Feb. 7, and in the Newbern battle Mar. 13; was engaged in the second battle of Bull Run and Chantilly, led the charge at Antietam that carried the stone bridge and the one against the intrenchments at Fredericksburg; was ordered to Ky., took part in the successful defense of Knoxville, commanded a brigade before Vicksburg and in the Richmond campaign in the battles of the Wilderness and Spottsylvania; was promoted brig.gen. 1864, May 12, served through the Petersburg campaign, and for recapturing Fort Steadman 1865, Mar. 25, was brevetted maj.gen. After the war he declined a colonelcy in the regular army, was elected auditor-gen. of Penn. as a republican 1865, 68, gov. 1872, 75, and maj.-gen. commanding N. G. S. Penn. 1879, and was

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appointed postmaster of Philadelphia 1879, and collector of the port 1880.

HART'S (or SPECTACLE) ISLAND: in Long Island Sound, between Sands Point and Pelham Neck; belonging to New York City, and in Rye tp., Westchester co. It was a military rendezvous during the civil war, and contains a monument to the Union soldiers buried there, a branch of the lunatic asylum, branch of the co. workhouse, hospital, and cemetery in which the unknown and paupers are buried.

HARTSHORN: see **HART: AMMONIA.**

HART'S'-TONGUE (*Scolopendrium*): genus of ferns, of which one species, *S. vulgare*, is found in moist woods, shady banks, caves on the seashore, and other cold and damp situations in Europe and in N America. It differs



Hart's-Tongue (*Scolopendrium vulgare*):

a, sporangium, or spore-capsule; **b**, the same, opened, showing its elastic ring.

in appearance from many other ferns, its fronds being in general quite undivided—though sometimes, by monstrosity, they are forked and even multipartite—linear, from a few inches to two ft. in length, and from an inch to two or three inches in breadth. The *sori* are in transverse lines, on the lateral nerves. Fine plants of this fern have a very ornamental appearance, and are in their greatest luxuriance in winter.

HARTSUFF, *hârt'sŭf*, **GEORGE LUCAS:** 1830, May 28—1874, May 16, b. Tyre, Seneca co., N. Y.: soldier. He graduated at the U. S. Milit. Acad. 1852; was asst. instructor of artill. tactics there 1856–59; appointed asst. adj.gen. and capt. 1861; promoted maj. U.S.A., appointed brig.gen. of vols., and promoted maj.gen. of vols. 1862;

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was a member of the board to prepare a code for the govt. of armies in the field and to revise the rules and articles of war; promoted lieut. col. and asst. adjt. gen. U.S.A. 1864; commanded the siege-works in front of Petersburg 1865, Mar., Apr.; brevetted brig. gen. and maj. gen. U.S.A. 1865, Mar. 13; and retired on full rank of maj. gen. for disabilities resulting from wounds in battle 1871, June.

HARTT, CHARLES FREDERICK: 1840, Aug. 23—1878, Mar. 18; b. Frederickton, N. B.; naturalist. He graduated at Acadia College, Wolfville, N. S. 1860, studied the geology of New Brunswick, attracted the attention of Prof. Louis Agassiz who invited him to the Cambridge Museum of Comparative Anatomy 1862, was on the geological survey of New Brunswick 1864, accompanied the Thayer expedition to Brazil 1865, elected prof. of natural history in Vassar College and of geology and physical geography in Cornell Univ. 1868, made exploring trips to valley of the Amazon 1870–1, planned the Brazilian geological commission 1874, and was chief of the geological surveys of the empire from 1875, May, till death. He published *Geology and Physical Geography of Brazil* (Boston 1870), and *Contributions to the Geology and Physical Geography of the Lower Amazons*. (Buffalo 1874).

HARTWICK, hárt'wîk, Ger. *hart'vîk* (or **HARTWIG, hárt'wîg**, Ger., *hart'vîg*), **JOHN CHRISTOPHER:** 1714–1796, July 17; b. Saxe-Gotha, Germany: Lutheran minister. He studied in the Univ. of Halle, engaged in missionary work among the Jews 1739, was ordained in London 1745, Nov. 24, and came to America to take charge of scattered Lutheran congregations 1746. He assisted in organizing the first Lutheran synod in America at Philadelphia 1748, preached in N. Y., Penn., Md., Va., Me., and Mass.; purchased a large estate from the Mohawk Indians; and in his will directed that it should be used to establish a college and theol. seminary. The town of Hartwick was built on his land, in Otsego co., N. Y., and the Hartwick Theol. Seminary was opened there 1815.

HARTZENBUSCH, harts'ën-bûsh, **JUAN EUGENIO:** Spanish dramatic poet of German extraction; b. Madrid, 1806, Nov. 6. He studied under the Jesuits, and produced his first work, *Amantes de Teruel*, 1836. His principal works since then, all published at Madrid, are *Doña Mencía* (1838), *La Redoma Encantada* (1839), *La Visionaria* (1840), *Alfonso el Casto* (1841), *Primero Yo* (1842), *Honorio* (1842), *El Buechiller Mendicario* (1842), *La Coja y el Encogido* (1843), *La Madre de Pelayo* (1846), and *El mal Apostol* (1864). He has published also prose works: *Cuentos y Fábulas* (1861), *Obras Escogidas* (1865), and *Obras de Encargo* (1864). His writings are characterized by glowing imagination, vigorous diction, and sonorous versification. He d. 1880, Aug.

HARUGARI, hâr ô-gá'ri: German social and benevolent order, established in the United States 1847, provided with national, grand (state), and subordinate lodges, and numbering (1889) 25,000 members. It publishes an organ, *Deutschen Eiche*, strives to preserve the purity of the Ger-

HARUM-SCARUM—HARUSPICE.

man language, and contains some of the most intelligent and progressive Germans in the United States.

HARUM-SCARUM, a. *hă'rŭm-skă'rŭm* [OE. *hare*, to terrify; Eng. *scare*, to strike with sudden terror]: unsettled; rash; giddy; flighty.

HARŪN, *hă-rôn'*, surnamed **AL-RASCHÎD** (i.e., Aaron the Orthodox): fifth Abbaside caliph of Bagdad, the most renowned of that line; 763 or 6—808 or 9 (reigned 786—808 or 9). He succeeded his eldest brother, Haudi, in the caliphate. Various insurrections in the interior of the kingdom were speedily put down, and the wars against the Byzantines and the Chasars brought to an end. His vast empire extended from the Caucasus to the sources of the Nile. H. gave himself up to the pleasures of life, leaving the entire administration of his kingdom in the hands of Yahya, the Barmecide, and his four sons; and the energy of their administration, the enforcement of order, and the general prosperity of the country proved that his confidence was not misplaced. His capital, Bagdad, he rendered the most flourishing city of that period. Tribute was paid to him from all quarters, and splendid edifices were erected by him at a prodigious cost. He was the patron of learning, poetry, and music, and his court was the resort of the most eminent Mohammedans of the age. He was celebrated in countless songs and narratives, and is the hero of several of the stories in the *Arabian Nights*. Toward the end of his reign, he conceived a deep hatred toward the Barmecides (see **BARMECIDES**), probably through jealousy at their increasing power; yet so well did he know their fidelity, that he suffered the reins of government to remain in their hands some years until it came to his knowledge (803) that Jaafer, the vizier's son, had secretly married his sister. H. immediately caused his sister to be put to death, with Jaafer, who had been his favorite and companion in his nocturnal rambles through the streets of Bagdad. The vizier and nearly all his family met the same doom. On the destruction of this family, H.'s affairs fell into confusion; treason and rebellion, no longer dreading the far-reaching arm of the able vizier, showed themselves in various quarters. The most formidable of these insurrections having broken out in Khorassan, in the n.e. of the empire, H. marched in person against the rebels. But an attack of apoplexy arrested him in Tûs, where he soon died. The tales of the *Arabian Nights* have thrown a false halo round his memory, for though he was undoubtedly the most cultivated monarch of the age, yet, like the most of the Abbaside race, he could, when it suited him, act to perfection the part of the avaricious and bloody tyrant.

HARUSPICE, n. *hă-rŭs'pĭs* [L. *haruspex*, a soothsayer—from Skr. *hīra*, an intestine; L. *speciō*, I inspect: by some supposed an Etruscan corruption of Gr. *hieroskopos*; by others, fr. *haruga*, victim, and *speciō*, I see]: in *anc. Rome*, one who pretended to foretell future events by inspecting the entrails of animals sacrificed. **—HARUS'PICY**, n. *-pĭ-sĭ*, the

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art of foretelling future events by the inspection of the entrails of animals. The *Haruspices* seem to have come originally from Etruria, whence the Romans derived many of their religious institutions. Their art, *haruspicina*, which in many respects was like that of the augurs (see AUGURIES AND AUSPICES), consisted in interpreting the will of the gods by inspecting the entrails of the animals offered in sacrifice (hence they are called also *extispices*), and by observing other circumstances of the offerings, such as the willingness or unwillingness of the victim to come to the altar, the flame, the smoke, etc. They took indications also from earthquakes, lightning, and all other extraordinary phenomena of nature called *portenta*. The haruspices did not equal the augurs in dignity and respect; they were regarded rather as *media* of communication with heaven, than as possessing any independent religious authority. They had no organization, like the augurs; they did not, in earlier times at least, form a *collegium*, nor had they a *magister*. They were, however, at one time considered of great importance; but latterly their art fell into disrepute with the more intelligent Roman citizens. The art of the haruspices was finally abolished by Constantine. Their sacred books were called *libri haruspicini*, *fulgurales*, and *tonitruales*.

HARVARD, *hâr'vard*, JOHN: 1607, Nov.—1638, Sep. 24; b. Southwark, London, England: founder of Harvard College. He graduated at Emmanuel College, Cambridge, England, 1635; married and came to America 1637, was made a freeman of Mass. and given a tract of land in Charlestown, where he began preaching as a Congl. minister, and in his will bequeathed £750 and 320 volumes from his library for the establishment of a college. A granite monument was erected over his remains in Charlestown 1828, and a memorial statute on the Delta at the univ. was unveiled 1884.

HARVARD UNIVERSITY.

HARVARD UNIVERSITY: at Cambridge, Mass.; oldest educational institution in the United States. It was established by order of the gen. court of the colony of Massachusetts Bay, which voted 1636, Oct. 28 to give £400 toward a school or college, one-half the amount to be paid the following year, the remainder on the completion of a suitable building. In 1637 the gen. court decided that the building should be located at Newtown. The following year John Harvard (q.v.) bequeathed £750 and his library of 320 selected vols. to the college, whereupon the gen. court voted that the institution should be known as Harvard College and changed the name of its site from Newtown to Cambridge in honor of the great English university town. John Harvard's bequest stimulated interest in the projected institution, and within a brief period, subscriptions, legacies, and gifts in great variety began to be received. Under the original act of the gen. court the govt. of the institution was vested in a board consisting of the gov. and dep.-gov. of the province, the magistrates of that particular jurisdiction, and all the ministers of the churches of Cambridge, Watertown, Charlestown, Boston, Roxbury, and Dorchester. In 1650 the institution was chartered as a corporation under the title of 'The President and Fellows of Harvard College,' and 1780 its rights and privileges were confirmed by a special section in the constitution of Mass., which added to the governing board the members of the governor's council and of the senate, and restricted the ecclesiastical representation to the pastors of the Congl. churches in the towns named. A further change was made 1812, when the pres. of the senate and speaker of the house were substituted for the entire senate, and the ecclesiastical representation was enlarged to 15 Congl. ministers and 15 laymen chosen from the colony at large instead of from the six towns. In 1834-43 there was an agitation to extend the ecclesiastical representation to all denominations and the plan was agreed to in the latter year. Again, 1851 the sec. of the state board of education was substituted for the governor's council, and the 30 elective members of the board—15 clergymen and 15 laymen—were divided into three classes of 10, one-third to be chosen each year by joint ballot of the senate and house of representatives. The final act in the disestablishment of the college from the state was authorized 1865, Apr. 28, when the state surrendered its 5 ex-officio memberships in the board and vested in the alumni the right to elect 30 of themselves—5 each year for a 6 year's term—under prescribed regulations. Thus the present governing authority was evolved, the pres. and treas. of the corporation and the board of 30 overseers. The latter have general jurisdiction over the internal administration of the institution, but no voice in the investment of its funds. Beside the corporation and the board of overseers, there is an academic council; composed of the pres., professors, and asst. and adjunct professors, whose special function is to recommend to the corporation such candidates as they may deem worthy to receive the higher degrees of the institution.

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The first class was formed 1638 and taught two years by Nathaniel Eaton. In 1640 the Rev. Henry Dunster, of England, was chosen the first pres., and 1642 the first class (9) graduated. The first printing press in the colony was set up in Pres. Dunster's house, and on it were first printed *The Freeman's Oath*, an almanac, and Dunster's improved versification of the psalms known as the *Bay Psalm Book*. Numerous small donations of books were received from time to time, and 1677 the college acquired the noted library of Theophilus Gale, theologian and philologist. The first of the halls—Harvard—was erected 1682, used also by the gen. court, destroyed by fire 1764, and rebuilt 1766. It was the receptacle of the collections of books till Gore Hall was built. The second hall was built by Lieut.-Gov. Stoughton 1699; it lasted till 1780, and was succeeded by a new building also bearing his name 1805. In 1719 Thomas Hollis, London merchant, began his generous donations, which provided professorships of divinity and of mathematics and natural philosophy, and a large number of books for the library. The Hollis family continued promoting the interests of the college to the fourth generation. In 1751 Paul Dudley, eminent jurist, founded the first endowed series of annual lectures; and 1761 the college attained wide repute by publishing the celebrated *Pietas et Gratulatio* on the death of George II. and the accession of George III.

The grounds at present comprise about 60 acres; the buildings of the college proper 16 dormitories with over 650 rooms, 16 buildings for recitations, examinations, laboratories, and collections, library, gymnasium, chapel, Memorial Hall. Teaching force includes 110 professors, 48 asst. professors, 176 tutors and instructors and about 98 other officers. Following is the roll of the presidents with their terms of service: Henry Dunster, 1640-54; Chas. Chauncy, 1654-72; Leonard Hoar, 1672-75; Urian Oakes, 1675-82; John Rogers, 1682-84; Increase Mather, 1685-1701; Samuel Willard (acting), 1701-7; John Leverett, 1708-24; Benjamin Wadsworth, 1725-37; Edward Holyoke, 1737-69; Samuel Locke, 1770-73; Samuel Langdon, 1774-80; Joseph Willard, 1781-1804; Samuel Webber, 1806-10; John Thornton Kirkland, 1810-28; Josiah Quincy, 1829-45; Edward Everett, 1846-49; Jared Sparks, 1849-53; James Walker, 1853-60; Cornelius Conway Felton, 1860-62; Thomas Hill, 1862-68; and Charles William Eliot, present incumbent, chosen 1868. The college yard proper comprises about 15 acres, and beside a beautiful lawn and many stately elm trees, contains the chief buildings. The president's house, brick, is on the e. border of the yard, and near it is the wooden house built for Pres. Wadsworth 1726. University Hall, built 1812-15 (recitations); Gore Hall, designed after King's College, Cambridge, England, and erected with the bequest of \$100,000 from Christopher Gore 1838-40 (library); Appleton Chapel, built 1856-58; and Boylston Hall, built about the same time (chemical laboratory), are of stone: Massachusetts Hall, 1720; Holden Chapel, 1747, and Harvard Hall, new building 1766, are of

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brick, and used for recitations; Hollis Hall, 1763; Stoughton Hall, 1805; Holworthy Hall, 1812; Gray Hall, 1863; Thayer Hall, 1869; Matthews Hall, 1870; and Weld Hall, 1871, are used for dormitories, as also is Holyoke House, 1870-1, facing the college yard on the s. side. Opposite the yard is the Lawrence Scientific School, founded on bequest of \$100,000 from Abbott Lawrence 1847, and about a quarter of a m. distant are Divinity Hall, 1826; Museum of Comparative Zoology, founded 1859, of which Louis Agassiz was prof. from its foundation till his death 1873; and the Peabody Museum of American Archæology and Ethnology, of which the first section—one-fifth of the whole—was erected 1877. Half a mile from the yard in another direction are the Botanical Gardens, opened 1805, and the astronomical observatory, built 1846. The medical school, originally located in Boston to give students the advantages of the hospitals, was provided with a new building 1883, which with the land cost about \$300,000. The school of dentistry, also in Boston, was established 1868; the law school, established 1817 and reorganized 1829, was located in Dean Hall, and now has its library in Austin Hall; the Bussey Institution, a school of practical agriculture and horticulture was established on the Bussey farm at Jamaica Plain 1869. On the 'Delta' near the yard is the magnificent Memorial Hall, completed 1874 at a cost of nearly \$600,000, as a monument to the students and graduates of the university who died in the Union service during the civil war. It contains the great dining hall, memorial vestibule, and academic theatre, where commencement exercises are now held. All the professional schools have technical libraries, beside which is the general library of the institution containing about 400,200 vols. and 285,000 pamphlets and other unbound publications. Since the elective system was introduced the number of courses of study has been increased to 420. In 1902-3 the total number of students was 5,206; aggregate vols. in libraries 607,100; amount of productive funds \$14,114,541; income \$1,436,292; bequests \$1,095,737; total value of university property \$20,914,541.

HARVEST, *n.* *hâr'vēst* [AS. *hærfest*; Ger. *herbst*, *harvest*, autumn: Dut. *herfst*, autumn: Icel. *haust*, autumn]: the time of reaping and gathering in corn or fruits; the corn, grain, or fruits gathered (see **HAY: REAPING**): the produce of labor; consequences of actions: *V.* to reap and gather in. **HAR'VESTING**, *imp.*: *N.* act of collecting the harvest. **HAR'VESTED**, *pp.* and *a.* reaped and collected, as

HARVEST BUG—HARVEST-MOON.

ripe corn. HAR'VESTER, n. -*ér*, one who. HARVEST-HOME, feast at the close of the harvest, or song sung at it. HARVEST-QUEEN, a representation of Ceres carried about at the close of the harvest.

HAR'VEST BUG (*Leptus autumnalis*): a sort of mite, a minute animal of the *Acarus* tribe, which attacks laborers in harvest fields. Its popular name is a misnomer, as it is not one of the *Insecta*. As the acari in their perfect state are usually provided with eight feet, and in their larval stage with only six feet, and as the H. B. has only the latter number, it was suspected by Siebold, and it has been since proved, that this animal is the larva of one of the Trombidida, a family of Acaridans. It is so minute, that, were it not for the brilliancy of its color, a vivid crimson, it would be invisible. It makes its presence known about the middle of July, and disappears toward the middle of Sep.; and is most plentiful in hot dry seasons. It occurs on the blades of grass, and on various plants in fields, gardens, and woods, and attacks not only man, but the dog, cat, etc. Persons with delicate skins are its special prey, and it seems to prefer the legs, the under part of the thighs, and the lower part of the abdomen. The wound that it inflicts—how produced is not well understood—occasions great irritation, which usually leads the victim to scratch, and thus to increase the inflammation. The skin becomes swollen and red, sometimes even purple; and the minute vesicles caused by these animals sometimes terminate in suppuration.

HAR'VEST-FLY: popular name in the United States for common species of *Cicada* (q.v.) which make their appearance as winged insects in the season of harvest. *C. septemdecim* is called the *Seventeen Years' Locust*, from a belief



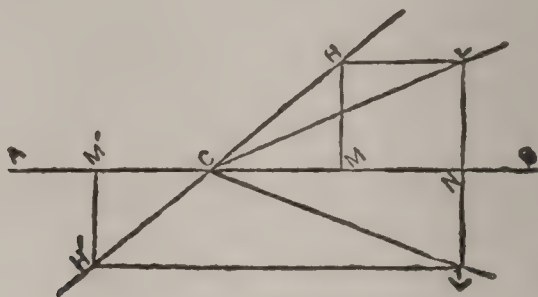
Harvest-fly (*Cicada septemdecim*).

that it lives for that period in its larval state, a belief which seems verified so far at least as that there is a periodicity in the appearance of these insects, observed to be at intervals of about 17 years. See CICADA (*C. septemdecim*).

HAR'VEST MOON: popular name for the moon which in certain latitudes, occurs full nearest the autumnal equinox (Sep. 23): the moon then rises for several days nearly at sunset, and about the same time by the clock, instead of rising, as it usually does, 52' later on one day than on the

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preceding. It thus gives the farmer on several evenings in his busy harvest season light sufficient to continue his work after sunset. This phenomenon is owing to the fact, that at this time the moon is in Aries, when the part of the ecliptic below the horizon makes the least angle with it, as shown in the following figure, where AB represents a portion of the equator; H'CH, a portion of the horizon; CL, a portion of the ecliptic when C represents the equinoctial



point of Aries; CL', a portion of the same if C were the equinoctial point of Libra. Then (supposing the moon to move in the ecliptic, a supposition not far from the fact, and one which greatly simplifies the explanation of this phenomenon), if the moon be at C (point of Aries) on one night, it will have retrograded to L by the same time on the following night; and, by the revolution of the earth in the direction NM', will appear on the horizon at H, and the distance LH reduced to time will give the moon's retardation. If C be the equinoctial point of Libra, then L' will be the moon's position on the second night, and it will rise at H' after the earth has revolved so as to carry the whole of the line H'L' above the horizon; this line, when reduced to time, gives the retardation. Hence, as the moon when at the full is in Aries at the sun's autumnal equinox, and in Libra at the sun's spring equinox, the retardation is least in the first instance and greatest in the second, being respectively $CN - CM$, and $CN + CM' = CN + CM$. In the latitude of Edinburgh ($55^{\circ} 58'$), the greatest retardation is 1 hour $8' 24''$, and the least $11' 44''$; in lat. $64^{\circ} 27'$, the least retardation is zero, or the moon rises at the same time on two successive evenings, while at the arctic circle ($67^{\circ} 30'$) it rises $4'$ earlier on the second evening. As the moon's orbit is inclined to the ecliptic, this irregularity will be increased or diminished according as the ascending node is between Capricorn and Cancer, or between Cancer and Capricorn. It is nothing at the equator, increasing as we proceed north.

HARVEY. *hâr'vî*, Sir GEORGE, P.R.S A.: 1806, Feb.—1876, Jan. 22; b. St. Ninians, near Stirling, Scotland: painter. At the age of 18 he was placed in the school of the Trustees' Acad., Edinburgh. In 1826, when the Royal Scottish Acad. was instituted, he was elected an associate, and 1829 an academician. He was a constant contributor to the Academy's exhibitions, and many of his works are well-known through the medium of engravings. The

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principal are—*Covenanters Preaching, Battle of Drumclog, The First Reading of the Bible in Old St. Paul's, The Curriers, Columbus Discovering America, and Quitting the Manse.* H. did not confine himself to historical art, some of his most successful works being representations of Scotch scenery. His landscapes are remarkable for pastoral peace, and some of the more imaginative for a singular solemnity of atmospheric effect. He was elected pres. of the Royal Scottish Acad. 1864, and knighted in 1867. He died at Edinburgh.

HARVEY, WILLIAM, M.D.: discoverer of the circulation of the blood: 1578, Apr. 1—1657, June 3; b. Folkestone, Kent, England. His father was a yeoman; and five of his brothers were merchants of weight and substance, *magni et copiosi*, in the city of London, while the sixth sat as member of parliament for Hythe.

After six years' attendance at the grammar-school at Canterbury, H., then 16 years of age, was entered at Caius College, Cambridge. He took his first degree in arts 1597, and having selected physic for his profession, left Cambridge about 1598, and went to the Univ. at Padua, then the most celebrated school of medicine in the world. Having passed five years in attendance on the lectures of Fabricius de Aquapendente, Julius Casserius, and other eminent men, who then adorned that university, he obtained his diploma as doctor of medicine 1602. He returned to England in the same year; and after receiving his doctor's degree from his original university, Cambridge, settled in London as a physician. In 1609 he was appointed physician to St. Bartholomew's Hospital, and 1615 Lumleian Lecturer at the College of Physicians—an office then held for life; and it is generally supposed that in his first course of lectures (in the spring of 1616) he expounded those original and complete views of the circulation of the blood with which his name is indelibly associated. It was not till 1628 that he gave his views to the world at large, in his celebrated treatise entitled *Exercitatio Anatomica de Motu Cordis et Sanguinis* (4to, Franc.), having then, as he states in the preface, for nine years or more gone on demonstrating the subject in his college lectures, illustrating it by new and additional arguments, and freeing it from the objections raised by skilful anatomists. Shortly after H.'s election as Lumleian Lecturer (1617 or 8), he was appointed physician-extraordinary to James I., and in the beginning of 1630 was engaged 'to accompany the young Duke of Lennox in his travels beyond seas.' In 1632, he was formally chosen physician to Charles I.; and 1633 we find that his absence, 'by reason of his attendance on the king's majesty,' from St. Bartholomew's Hospital was complained of, and that Dr. Andrews was appointed as his substitute, 'but without prejudice to him in his yearly fee or in any other respect'—a procedure which shows the esteem in which H. was held. We learn from Aubrey that he accompanied Thomas Howard, Earl of Arundel, in his embassy to the emperor 1636; and during this journey he publicly demonstrated to Caspar Hofmann,

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the distinguished prof. of Nürnberg, and one of the chief opponents of his views, the anatomical particulars which made the circulation of the blood a necessary conclusion—a demonstration which, it is reported, was satisfactory to all present except Hofmann, who still continued to urge futile objections. See CIRCULATION, in Anatomy, etc. He attended the king in his various expeditions, and was present with him at the battle of Edgehill, 1642, Oct. 23. He accompanied the king after the battle to Oxford, where, according to the same authority. 'he came several times to our college (Trinity), to George Bathurst, B.D., who had a hen to hatch eggs in his chamber, which they opened daily to see the progress and way of generation;' and where the honorary degree of doctor of physic was conferred on him in Dec. of that year. In 1645 he was, by the king's mandate, elected warden of Merton College; but on the surrender of Oxford to the parliament 1646, July, he left the university and returned to London. He was now 68 years of age, and seems to have withdrawn himself from practice, and from further participation in fortunes of his royal master. During the remainder of his life, he was usually the guest of one or other of his brothers, now men of wealth and high standing in the city; and was at the country-house of one of them that Dr. Ent visited him at Christmas 1650, and after 'many difficulties' (see Dr. Ent's Epistle Dedicatory, in Willis's translation of Harvey's works) obtained from him the ms. of his work on the generation of animals, published in the following year under the title *Exercitationes de Generatione Animalium*.

From this period to the time of his death, the chief object which occupied his mind was the welfare and improvement of the College of Physicians. In 1654 he was elected pres. of the college, but he declined the office on account of age and infirmities. In 1656, July, he resigned his Lumleian lectureship, which he had held more than 40 years; and in taking leave of the college, presented to it his little patrimonial estate at Burmarsh, in Kent. He did not long survive, but, worn down by repeated attacks of gout, died at London, and was buried in a vault at Hempstead in Essex. In 1883, Oct., his remains were removed, and with befitting solemnity reinterred in a marble sarcophagus in the Harvey Chapel attached to the same church at the cost of the Royal College of Physicians.

Harvey's works in Latin were published 1766; a translation by Dr. Willis 1847 (new ed. 1881), See Willis's *Life of H.* (1878); and Huxley at the Ter-centenary celebration (*Nature*, 1878). A statue of H. was erected at Folkestone 1881.

HARWICH, *hâr'wich*, local *hâr'rîdj*: municipal and parliamentary borough, seaport, and market-town of England, county of Essex, pleasantly situated on an elevated and healthy site near the n.e. extremity of a promontory 66 m. n.e. of London. Southward from the town extends an esplanade, giving fine views of the harbor and the German Ocean. The chief branches of industry are the

HARZ MOUNTAINS—HASDRUBAL.

manufacture of Roman cement, and of artificial manure from Coprolites (q.v.), fishing, and ship building. Steamers run daily to Ipswich, and in summer there is steam communication with London. The harbor of H., formed by the junction of the Stour and the Orwell, is said to be the best on the e. coast of England. It is capacious, safe, and commodious; but its entrance is rocky, and, though there are two light-houses and numerous buoys, it cannot be entered without careful navigation. H. has been made a harbor of refuge. The battery by which the town is defended was erected about 1820, at which time a considerable space intervened between it and the usual tide-mark; but so great have been the encroachments by the sea on the promontory on which H. stands, that two jetties or groins, 1,350 ft. and 1,000 ft. long respectively, have been constructed to prevent its nearer approach; and these have proved successful. In 1880, 1,434 vessels, of 363,770 tons, entered, and 1,493, of 367,072 tons, cleared the port. Pop. (1881) 7,810.

HARZ MOUNTAINS, *hárts*: broad mountain-range in n. Germany, extends e.s.e. from Goslar and Osterode in Hanover to Hettstädt and Mansfeld in Prussian Saxony. It forms an elevated plateau, covered with irregular and, for the most part, forest-clad mountains, and situated mainly in Hanover and Brunswick. The range, divided into Upper and Lower Harz, is 50 m. in length, about 16 m. in breadth, covering more than 750 sq. m. It is composed mostly of graywacke belonging to the Devonian formation, and broken through in one or two places by granite, as in the Brocken (q.v.) and the Rammberg. The highest peak of the range is the Brocken. The H. M. are exceedingly rich in metals and minerals. Silver, iron, lead, copper, zinc, etc., are mined; marble, alabaster, and granite are quarried. Mining, stone-cutting, and the timber-trade afford employment to the inhabitants. The H. M. are the scenes of many of the wild legendary tales of German literature. Pop. abt. 70,000.

HAS, v. *hǎz* [contracted from *haves*]: 3d pers. sing. pres. of **HAVE**, which see.

HASBEYA, or **HASBEIYA**: Druse town in Syria at the foot of Mount Hermón, 36 m. w. of Damascus; supposed by some travellers identical with the Baal-Gad, or Baal-Hermon of the Bible. An American Prot. mission was established there 1846, and the community subsequently suffered persecution by the Greek Church and the Druses, the latter 1860 killing nearly 7,000 of the Prot. adherents. Olives, vines, and fruit trees grow luxuriantly in the valley; and ruins of several ancient temples are near the town. Pop. (four-fifths Christians) about 5,000.

HASDRUBAL, *hǎs'drú-bal*, more correctly **ASDRUBAL**, *ǎs'drú-bal* (*one helped by Baal*): name of frequent occurrence in Carthaginian history, there being nearly 20 more or less celebrated individuals so called.

HAS'DRUBAL (d. B.C. 221), son-in-law of Hamilcar (see **HAMILCAR BARCA**), who accompanied his father-in-law

HASDRUBAL.

to Spain (B.C. 236), and for eight years after the death of Hamilcar, carried out Hamilcar's plans. The empire which the military talent and energy of Hamilcar had founded was consolidated by the skilful statesmanship of Hasdrubal. He formed the s. and e. coasts of Spain into Carthaginian provinces, and founded many towns, the most famous of which was Carthago Nova (now *Cartagena*), possessing a fine harbor, and having in its neighborhood rich mines. This city he adorned with a splendid 'royal palace.' Under his direction, agriculture flourished; mining was vigorously prosecuted; the tribes as far n. as the Ebro became subject to Carthage, and paid tribute; and powerful chiefs were attached to Carthaginian interests by intermarriage and other means. H. was at length murdered by a slave, whose master he had put to death. He was a leader of the popular party at Carthage after the conclusion of the first Punic war, and was early brought into public life. He was a skilful general, and showed great energy and prudence in a war with the Numidian tribes. But his talents were particularly administrative. So powerful was he in Spain, and so independent of the home government, that the Romans made the famous treaty in regard to the Iberus as the common frontier not with the Carthaginians, but with Hasdrubal.

HASDRUBAL (d. B.C. 207), brother of the great Hannibal, and son of Hamilcar Barca, was conspicuous in the second Punic war, first as the opponent of the Scipios and the conquerer of Cn. Scipio in Spain, afterward as commander of a Punic army in Italy. While he was marching southward to join Hannibal in Umbria, he encountered the Roman consuls, C. Nero and M. Livius, at the river Metaurus. The Romans gained a complete victory; an immense number of the Carthaginian forces were slain; and H. himself, when he saw that all was lost, rushed into the midst of the enemy, and fell: see HANNIBAL. In generalship and in military bravery he seems to have been little inferior to his father and brother.

Others of the name were the following,—HASDRUBAL, one of Hannibal's principal officers in his Italian campaigns, who largely contributed, by a well-timed charge, to decide the victory on the great day of Cannæ.—HASDRUBAL, called Calvus, i.e., the Bald, led an expedition to Sardinia, B.C. 215, during the second Punic war. He was defeated by the Roman general, and carried to Rome as a captive.—HASDRUBAL, the son of Gisco, co-operated with H., son of Hamilcar, in Spain, and afterward, in conjunction with Syphax, unsuccessfully opposed Scipio in Africa, B.C. 204.—HASDRUBAL, the unfortunate general to whom fell the hopeless task of defending Carthage against the Romans in the third Punic war. He was at first commander outside the city (another H., grandson of the Numidian Masinissa, being general within the city); but he ultimately became sole leader, and opposed all the plans and movements of Scipio with great energy and skill. But at length Carthage fell, and H. was carried prisoner to Rome, to adorn the triumph of his conquerer.

HASE, *há'zèh*, KARL AUGUST: German theologian: b. Steinbach, Saxony, 1800, Aug. 25. After leaving Altenburg gymnasium, he studied theology at Leipsic, Erlangen, and Tübingen. Fortaking part in the *Burschenschaften*, he was, after a tedious trial, confined five months in the fortress of Hohenasperg. In 1829, after having been *Privat-docent* for a year, he was made extraordinary prof. of philosophy in Leipsic, where his lectures on Dogmatics and the life of Christ were especially attractive. He was, indeed, the first critical biographer of Christ who decidedly rose above the old rationalistic conception of him as merely an excellent moral teacher, his *Leben Jesu* (1829, 5te Aufl. 1865), which appeared six years before Strauss's, having proposed as its aim to show, 'how Jesus of Nazareth, according to divine destination, by the free act of His own spirit, and by the opportunities of His time, became the Savior of the world.' Vindicating equally the rights of the individual religious consciousness, and the historical importance of the church, he opposes modern supernaturalism, as in *Die Leipziger Disputation* (1827), equally with extreme rationalism, as in *Theologische Streitschriften* (1834-37), and *Die Tübinger Schule* (1855). Before the first year of his professorship in Leipsic was over, H. was called as prof. of theology to Jena, where he remained, laboring principally in the departments of Dogmatics and church history. His *Hutterus Redivivus* (1827, 10th ed. 1862) seeks to do justice to the old Lutheran dogmatic theology in contrast with modern systems by exhibiting its harmonious completeness: it is in extensive use among the German theological students. Besides his *Compendium of Universal Church History* (1834, 9th ed. 1867), which has been translated into English, and is unsurpassed for its concise pictures of times, men, and systems, H. treated special portions of church history in *Die beiden Erzbischöfe, Neue Propheten, Franz von Assisi* (1856), and *Das geistliche Schauspiel* (1858). He published also several works on ecclesiastical law; an ed. of the *Libri Symbolici Ecclesiæ Evangelicæ: Ideale und Irrthümer* (1872); etc. He d. 1890, Jan. 3.

HASH, v. *hāsh* [F. *hachis*, minced meat—from *hacher*, to hack or mince (see HACK 2)]: to chop into small pieces; to mince and mix: N. a kind of stew consisting of meat cut up into small pieces. HASH'ING, imp. HASHED, pp. *hāsht*.

HASHISH, or HASCHISCH, or HASHASH, or HUSHEESH, n. *hāsh'ēsh*: oriental name of the plant (or rather of the tops and tender parts of the plant) scientifically known as *Cannabis indica*, and which we term *Indian Hemp*. For the medicinal value of the preparations of H. see HEMP, INDIAN. It is the peculiar intoxication occasioned by the use of H. as a narcotic that will be now specially noticed. Its use is extensive throughout the east.

Various preparations of the plant are employed to produce the desired effect. A favorite mode of extracting its active principle is by boiling the tops and flowers with water, to which butter or oil has been added, evaporating, and thus forming an oleaginous solution or fatty extract. This fatty

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extract is frequently mixed with other substances reputed to possess aphrodisiac properties, and is taken in the form of electuary, confection, or pastil. The *majoon* used at Calcutta, the *mapouchari* at Cairo, and the *dawames* or *dawamesc* of the Arabs, are preparations of this kind.

Dr. Moreau, of Tours, who has written an elaborate work on this subject (*Du Hachisch et de l'Alienation Mentale*, 1845), based not only on general observation but on personal experience, describes the *fantasia* (the term applied in the Levant to the excitement produced by this agent) as mental rather than sensual. 'The hashish-eater is happy, not like the gourmand or the famished man when satisfying his appetite, or the voluptuary in the gratification of his desires, but like him who hears tidings which fill him with joy, like the miser counting his treasures, the gambler who is successful at play, or the ambitious man who is intoxicated with success' (p. 54.) But the use of this seductive drug is a fearful peril, and an ultimate ruin. One of its first appreciable effects is the gradual weakening of the power of controlling and directing the thoughts. Then comes the stage above described; and accompanying, and in part following it, there are observed errors of sense, false convictions, and the predominance of one or more extravagant ideas. These ideas and convictions are generally not altogether imaginary, but are suggested by external impressions erroneously interpreted by the perceptive faculties. Finally, if the dose is sufficiently powerful, there is a complete withdrawal of the faculties of the mind from external things.

HAS'LAR HOS'PITAL: see GOSPORT.

HASLET, n., or HASTLET, n. *hās'let*, or HARSLET, n. *hārs'let* [F. *hastille*, the pluck of an animal—from *haste*, a spit—from L. *hasta*, a spear: OF. *hastier*, the rack on which the spit turns]: the heart, lights, liver, etc., of a pig.

HASLINGDEN, *hās'ling-dēn*: small manufacturing and market-town of England, county of Lancashire, in a mountainous district, on and around an eminence 18 m. e.s.e. of Preston. It has a town-hall and mechanics' institute, buildings of recent erection, and a parochial chapel, a handsome edifice, the front of which is 300 years old. There are also chapels and meeting-houses for Methodists, Congregationalists, Baptists, and Primitive Methodists. Cotton and woolen manufactures are extensively carried on. In the vicinity are coal-mines and stone-quarries. Pop. (1891) 18,225.

HASP, n. *hāsp* [AS. *hæps*, a lock, a latch: Ger. *haspe*, the hinge of a door: Icel. *hespa*; Sw. *haspa*, a clasp, a latch: Dut. *haspe*, a reel to wind yarn on]: a fastening; the clasp that passes over a staple to be fastened by a padlock; in *Scot.*, a hank of yarn: V. to fasten with a hasp. HASP'ING, imp. HASPED, pp. *hāsept*.

HASSAN, *hās'sān*: district of India in Mysore, bounded s.w. by the Madras dist. of S. Kanara, and s. partly by the state of Coorg; lat. 12° 30'—13° 22' n., long. 75° 32'—76° 58' e.: 3,291 sq. m. It is divided into a hill and a plain country, is drained chiefly by the Hemavati and Yagachi rivers,

HASSAN-BEN-SABAH—HASSLER EXPEDITION.

contains valuable forests, numerous wild animals, and large deposits of kaolin, felspar, and quartz, and has a rich alluvial loam in its valleys. The principal crops are rice, tobacco, sugar-cane, cocoa-nut, and areca-nut palms, plantain trees, and chillies; exports, food grains and coffee; imports, European piece-goods, hardware, and spices. There were (1874) 390 schools, with 6,036 pupils. Pop. (1871) 669,961 --Hindus, 650,877; Mohammedans, 14,460; Jains, 1,954; Christians, 2,670.

HASSAN-BEN-SABAH: the 'Old Man of the Mountain' of European story, founder of the sect of the Assassins (q.v.), likewise denominated Hassanis or Ismanilians.

HASSARD, *hās'serd*, JOHN ROSE GREENE; 1836, Sep. 4 --1888, Apr. 18; b. New York: journalist. He graduated at St. John's College, Fordham, N. Y., 1855; was asst. ed. of Appleton's New American Cyclopædia, 1857-63; became an editorial writer on the New York Tribune, 1866, succeeded the late George Ripley as literary editor, 1880, and was also musical critic of the paper till 1883. In 1878 he translated the telegraphic cipher dispatches that passed between the national democratic committee and its agents in the Southern States, when the presidential election returns of 1876 were disputed, and afterward sought unavailing relief from the mental strain in travel and camping life. Among his publications are *Life of Archbishop Hughes* (1866), *Life of Pope Pius IX.* (1877), *History of the United States* (1877), *The Ring of the Nibelung: a Description of its First Performance* (1877), and *A Pickwickian Pilgrimage* (1881).

HASSELT, *hās'selt*: town of Belgium, cap. of the province of Limbourg, near the centre of the province, on the left bank of the Demer, 17 m. w.n.w. of Maastricht. It is well built, surrounded by walls, and has a considerable trade in distilling, and in the manufacture of linen fabrics, lace, and tobacco. Pop. (1890) 13,250.

HASSLER, *häss'lér*, FERDINAND RUDOLPH: 1770, Oct. 6--1843, Nov. 20. b. Aernen, Switzerland: scientist. He received a scientific education in his native country, removed to the United States, and was appointed prof. of mathematics in the U. S. Milit. Acad. 1807; was appointed director of the U. S. Coast Survey, and sent to Europe to procure instruments and apparatus, and became the first supt. of the survey, which he directed 1816-18 and 1832-43. He was chief of the bureau of weights and measures for many years. His publications include papers in the *Transactions* of the American Philosophical Soc., a series of mathematical text-books, a *System of the Universe*, 2 vols. (1828), and *Reports to the U. S. Senate* (1832), and to the *Secretary of the Treasury on Weights and Measures* (1842).

HASSLER EXPEDITION: fitted out by the U. S. Coast Survey to pursue hydrographic investigations on the Pacific coast; so called from the name of the vessel built for the purpose and christened in honor of the first supt. of the survey. The vessel was commanded by Com. P. C. Johnson, U.S.N.; carried Prof. and Mrs. Louis Agassiz, L. F. Peurtales, chief of dredging operations, Dr. F. Steindachner, ichthyologist, Dr. Th. Hill, botanist and photog-

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rapher, Dr. White, chemist and photographer, and J. H. Blake, draughtsman and collector; sailed from Boston, 1871, Dec. 4; and returned to San Francisco 1872, Aug. Much valuable scientific information and large collections in natural history were acquired, but the death of Prof. Agassiz (1873, Dec. 14) prevented the publication of his exceedingly minute observations.

HASSOCK, *n.* *hās sōk* [W. *hesg-og*, sedgy—from *hesg*, sedges: Scot. *hassock*, anything bushy, a large round turf used as a seat: Sp. *haz*, a bundle of hay, grass, or brush-wood]: a cushion or thick mat to kneel on in church; a padded footstool.

HAST, *v.* *hāst* [contracted from *havest*]: 2d pers. sing. pres. of **HAVE**, which see.

HASTATE, *a.* *hās'tāt*, or **HAS'TATED**, *a.* *-tā-tēd* [L. *hastātus*, spear-like—from *hasta*, a spear]: spear-shaped; formed like the head of a halberd; in *bot.*, applied to a leaf with two portions of the base projecting more or less completely at right angles to the blade.

HASTE, *n.* *hāst* [Lap. *hasetet*; Ger. *hetzen*, to set on dogs; *hasten*, to haste: O.H.G. *heist*, anger: Sw. *hasta*, to push forward: Icel. *hast*, fierce]: hurry; celerity of motion; precipitation: *V.* to move with swiftness or speed; to push forward; to urge on. **HAST'ING**, *imp.* **HAST'ED**, *pp.* **HASTEN**, *v.* *hā'sn*, to drive or urge forward; to accelerate; to push on; to be speedy or quick. **HASTENING**, *imp.* *hā'sn'ing*. **HASTENED**, *pp.* *hā'snd*. **HASTENER**, *n.* *hā'sn-ēr*, one who. **HASTY**, *a.* *hā'stī*, quick; speedy; eager; precipitate; irritable; rash; in *OE.*, early ripe. **HA'STILY**, *ad.* *-lī*, with speed or quickness; rashly. **HA'STINESS**, *n.* *-nēs*, speed; hurry; rash eagerness. **HASTY PUDDING**, oatmeal and water, or flour and water or milk, boiled quickly together.—**SYN.** of 'haste, *n.*': dispatch; speed; bustle; quickness; nimbleness; swiftness; expedition; precipitance; vehemence; rashness; urgency;—of 'hastiness': rashness; temerity; precipitancy; precipitation; irritability.

HASTENER, *n.* *hās'nēr*: see under **HASTLER**.

HĀSTINAPURA: ancient capital of the Kurus (see **KURU**), frequently mentioned in the Mahābhārata. The Vishnu Purāna relates that it was founded by Hastin, and was washed away by the Ganges—under the reign of Nichakra, who, in consequence of this event, had to remove the seat of his government to Kaus'āmbī—and at a later period it was undermined by Balarāma. It was on the Ganges, and is placed by Lassen, in his map to the *Indische Alterthumskunde* about 78° long. and 28° 50' latitude.

HASTINGS, *hās'tingz*: city, cap. of Dakota co., Minn.; at junction of the Miss. and Vermilion rivers; on the Chicago Milwaukee and St. Paul, and the H. and Dakota railroads; 20 m. e.s.e. of St. Paul. Valuable water-power is afforded by the Vermilion river, which here has a fall of 110 ft. in half a mile. H. has become a noted lumber and wheat market; has several flouring and saw-mills, and grain elevators; manufactures machinery, carriages, and furniture; and contains a public library, young ladies' acad.,

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central and several ward schoolhouses, 10 churches, 1 national bank (cap. \$100,000), 1 state bank (cap. \$50,000), and daily and weekly newspapers. Pop. (1870) 3,458; (1880) 3,809; (1890) 3,705; (1900) 3,811.

HASTINGS, *hāst'ingz*: city, cap. of Adams co., Neb., in the s. and central part of the state; 96 m. w. of Lincoln, the state cap.; on the main line of the Chicago Burlington and Quincy railroad, and branch lines of the Missouri Pacific, Union Pacific, and Northwestern roads. Other roads to this point have been surveyed. H. is in the centre of the S. Platte country, a rich agricultural and stock-growing region, and has a large wholesale and retail trade. It has foundries, brickyards, carriage and sash-and-blind shops, a bottling establishment, cigar-shops, broom factories, and a large candy factory. The principal streets are paved, and provided with sewers, and there are more than 20 m. of street railways. There is a good system of water-works, light is furnished by gas and electricity, and telephone lines are in operation. Just outside the business centre are many fine residences. Several banks do a large business; there are a board of trade and a strong loan and investment association. Two daily and five weekly newspapers, one of the latter printed in German, are sustained. The Young Men's Christian Assoc. and various Masonic organizations are represented. A fine opera-house, seating 1,400 people, has been built. The leading denominations have churches; the public schools are excellent; and Hastings College, an endowed institution under Presb. management, gives a four years' course of study, is open to both sexes, and has about 200 students, with a full corps of instructors. The growth of the city during the last decade has been very rapid, and still continues. Pop. (1880) 2,817; (1885) 7,980; (1888) 12,000; (1890) 13,584; (1900) 7,188.

HASTINGS, *hās'tingz*: parliamentary and municipal borough, market-town, and famous watering-place of England, county of Sussex, picturesquely situated on the shore, and surrounded by high cliffs on all sides except the s., which is open to the sea. It is about 35 m. e. of Chichester, and 74 m. s.e. of London by rail. It consisted formerly of only two streets, intersected by a small stream called the Bourne; but is now a considerable town, many new streets and terraces having been erected in the present century. Stretching w. along the sea-front of the town is the Marine Parade, a spacious terrace, which, joined and continued w. by the Grand Parade of St. Leonards-on-Sea, forms one of the finest sea-walks in the kingdom. Formerly an insignificant village, situated a mile w. of H., St. Leonards is now the Belgravia of H., is united with it by lines of handsome houses, and included with it in the population returns. The chief point of interest in H. is the ruin of an ancient castle, on the summit of the West Cliff, and supposed to have been erected previous to the Norman invasion. Fishing is the chief occupation—about 160 boats

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are employed. Owing to the want of a harbor, the boats have to be pulled up on the beach by means of a rope and windlass, worked by horse-power. H. is a great resort of pulmonary invalids during the cold season of winter and spring: and in summer has facilities for bathing, though probably less desirable as a summer residence than many other towns on the s. coast.

H. was a considerable place in the time of the Anglo-Saxons, and in the beginning of the 10th c. was of sufficient importance to have a mint. Here William the Conqueror landed 1066, and in the immediate vicinity are traces of a camp, said to be that occupied by the Normans on the night previous to their march against the Saxons: see **BATTLE**. Under the Confessor, H. became one of the Cinque Ports, after which it long continued in great repute for ship-building. Pop. of municipal borough (1881) 42,258; (1891) 52,340; (1901) 65,528.

HASTINGS, *hās'tingz*: according to the French chroniclers, a viking or sea-rover of the 9th c. It is uncertain whether he was born in Norway, Denmark, or France, probably in Denmark. The story of his devastation is appalling. From his youth till old age his whole delight appears to have been in pillage, rapine, and bloodshed. The shores and cities of France, Spain, Portugal, and Italy are said to have been repeatedly wasted and burned by him and his savage comrades. As the Scandinavian *sagas*, however, speak of several Hastings, the Danish historian Suhm considers that the French chroniclers—who wrote at a much later period—have gathered up the confused traditions of the south-west of Europe, relating to all the pirates of this name, and applied them to a single personage, who has thus become in their hands rather a type of the ferocious Norse viking, than a historical individual.

HASTINGS, FRANCIS RAWDON, Marquis of: 1754, Dec. 9—1826, Nov. 28; b. Ireland: soldier. He entered the British army 1771; served in America through the war for independence; was made Baron Rawdon; succeeded his father as Earl of Moira 1793; re-enforced the Duke of York in Holland 1794; and became master-gen. of ordnance 1806. In 1813–21 he was gov.gen. of India, and for his important milit. services there was created Marquis of H. 1816. He resigned that office, and from 1824 till his death was gov. of Malta.

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HAS'TINGS, THOMAS, MUS. DOC.: 1784, Oct. 15—1872, May 15: b. Washington, Conn.: musician and composer. Early in life he became a trainer of church choirs; and after writing and lecturing on church music 1817-32, removed to New York where he passed the remainder of his life in promoting the improvement of church music. He published nearly 50 separate vols. of hymns, melodies, introits, etc., and received his degree from the Univ. of the City of New York 1858.

HAS'TINGS, THOMAS SAMUEL, D.D.: Presb. theologian: b. Utica, N. Y., 1827, Aug. 28; son of Thomas H., MUS. D. He graduated at Hamilton College 1848, and Union Theol. Seminary 1851; was pastor of the Mendham (N.J.) Presb. Church 1852-56, and the West Presb. Church, New York, 1856-81; prof. of sacred rhetoric in Union Theol. Seminary 1881-88, and appointed pres. of the seminary 1888, Feb. He received the degree D.D. from the Univ. of the City of New York 1865.

HAS'TINGS, WARREN: governor-general of India: 1732, Dec. 6—1818, Aug. 22; b. Churchill, Oxfordshire, England; descended from an ancient Worcestershire family. He was early left an orphan; but when only seven years old, he resolved to recover the manor and estate, which had passed out of the possession of his family. He was sent to Westminster School, and gave promise of being among the first scholars of his age, when, at 17, he was sent out to India as a writer in the E. India Company's service. Having gained a moderate fortune, he returned to England 1764. In 1769, he again visited India, on his appointment as member of the council at Madras, and 1772 was promoted to be pres. of the supreme council of Bengal. A year later, parliament enacted that the chief of the presidency of Bengal should be styled gov.gen. of India, and that H. should be the first gov.gen. The finances of his government were in a disordered state, yet the demands of the E. India Company for money were incessant. His first step was to wrest certain rich provinces from the Great Mogul, and to sell them to Sujah Dowlah, the Nabob of Oude. The Rohillas resisted the transfer, and H. lent the nabob his army for their subjugation. The execution of Nuncomar soon after, on a charge of forgery, can no longer be charged as a crime against H.; for the verdict was amply justified by the evidence laid before Sir Elijah Impey and three other judges. H. exacted vast sums from Cheyte Sing, Rajah of Benares, and finally confiscated all his possessions. He formed a treaty with Asaph-ul-Dowlah, son of Sujah Dowlah, under which the mother and grandmother of the nabob, known as the begums or princesses of Oude, were to be stripped of their domains and treasures for the benefit of the Company. These were the chief blemishes of his Indian administration; but against these are undoubtedly to be set great public services. He was constantly trammelled by orders from home, and frequently borne down by an able and factious majority in council; yet he preserved the British empire in India from a formidable combination of foreign and domestic enemies. He acted with vigor when the war

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with France broke out; he broke the power of Hyder Ali; he organized a system by which justice was dispensed, the revenue collected, and peace maintained. He encouraged Asiatic learning. When he left India in the spring of 1785, that great empire was tranquil. A treaty had been concluded with Tippoo Sahib, son and successor of Hyder, and the Carnatic had been evacuated by the armies of Mysore. On his arrival in England, he was received with distinction by George III. and the court. The directors acknowledged his services by a unanimous vote of thanks. The whig opposition were, however, loud and vehement against him, and succeeded in carrying in the lower house a motion for his impeachment at the bar of the house of lords. The trial began in Westminster Hall 1788, Feb. 13, the managers of the impeachment being Burke, Fox, Sheridan, Windham, and Charles (afterward Earl) Grey. Burke opened the proceedings in a speech which extended through four sittings; Fox and Gray urged the charge respecting Cheyte Sing; and Sheridan was intrusted with the conduct of the article relating to the princesses of Oude. The interest taken by the public in the impeachment began to decline after these great displays of rhetoric. The trial notwithstanding, languished for more than seven years. On the 149th day (1795, Apr. 23), it terminated in the acquittal of Hastings. Out of 400 peers, only 29 voted. The last 24 years of his life were passed serenely at Daylesford, in literary pursuits, and the occupations of a country gentleman. He died at Daylesford. The story of his life and his memorable impeachment has been told by Lord Macaulay with much greater eloquence than impartiality. See also the *Biography* by Trotter (1878) and *The Story of Nuncomar* by Sir James F. Stephen (1885).

HASTINGS SAND: lower division of the Wealden beds, forming a portion of the Lower Cretaceous period. It consists of a considerable thickness (1,000 ft.) of sand, calciferous grit, clay, and shale; and differs little from the Weald Clay, the upper division of the series, except in being a little more arenaceous. The strata have been deposited in shallow fresh water. The sand often exhibits fine specimens of ripple-marks, and the clay which separates the sand-beds sometimes contains cracks produced by the drying of the bed on exposure. The strata are highly fossiliferous. There are numerous saurian reptiles, including the huge iguanodon and the flying pterodactyle. The remains of several chelonians also occur. The fish belong chiefly to the ganoid or placoid orders, the most remarkable being the lepidotus, whose conical palate teeth and thick, square enamelled scales are very frequent. The shells belong to genera which inhabit fresh water, such as *Paludina*, *Cyclas*, and *Unio*.

HASTLER, n. *häs'ler* [OF. *hastier*, the rack on which the spit turns (see **HASLET**)]: corrupted into **HASTENER**, n. *häs'nër*, a screen to reflect the heat of the fire on roasting meat. *Note*.—The corruption into *hastener* supposes the word to come from *haste*, which it does not.

HASTLET, n. *häs'lèt*: see **HASLET**.

HAT.

HAT, n. *hăt* [Icel. *hattr*; Fris. *hatte*; Dan. *hat*, a hat]: a covering for the head: *figuratively*, the dignity of a cardinal in the R. Cath. Chh. **HAT'BAND**, n. a band round a hat. **HATTED**, a. *hăt'ted*, wearing a hat. **HAT'LESS**, a. without a hat. **HAT'TER**, n. *-ter*, one who makes or sells hats: see **HATTER** 1.

HAT: species of head-covering, which has assumed various shapes and characters. What we understand by a hat is a fabric of felt (q.v.), or a silk material used as a substitute for felt. Hats are only a variety of the still more ancient cap and bonnet, and were at first made of velvet, silk, and other rich materials. Formed of felt, and assuming a certain firmness of fabric, hats began to be manufactured in England about 1510, and we hear of them superseding caps, or softer headgear, in the reign of Elizabeth. The felting of caps is, however, said to have been long known anterior to this period; and there is a tradition that a knowledge of felted caps or hats had been introduced by the Crusaders. Wool was the material first employed for felt hats; but in time, as trade with America was developed, the fur of the beaver (q.v.), being finer and softer, came into use; hence, the term beaver was long synonymous with hat. For about three centuries, fine beaver hats, dyed black, and prepared with much skill, formed the head-covering of the higher classes in Great Britain; the middle and humbler classes continuing, for a long time, to use the less expensive caps and bonnets according to the fashions of their ancestors: see **BONNET**.

The growing scarcity of beaver-fur led to attempts to substitute a cloth of silk plush drawn over a pasteboard frame about 1810. These were not very successful; and hats of wool or beaver-felt were common until about 1840. The high cost of beaver at length forced on the improvement of silk-hats, and now the beaver is almost entirely superseded; while the fabrication of silk-hats has been carried to great perfection in England and on the continent and in the United States. The silk hat consists of a body and rim, usually made of two or three layers of cotton cloth saturated with varnishes, to give the fabric stiffness, and make it waterproof. These are molded on wooden blocks according to the fashion of the day; and when the desired shape is produced, the whole is carefully furnished over with lac and dammar varnish, and, before dry, the fine silk plush is applied with great nicety, so as to prevent the seams being perceived; it is then trimmed with silk braid on the edge of the brim, and a silken band round the junction of the body with the brim; and the lining of leather and thin silk being put in, it is complete. Lightness, gloss, and durability are the prime qualities of the silk-hat; and in these respects the hats of New York manufacture deserve high commendation. Excellent hats are made in London, Paris, and Edinburgh; but they are heavier than those of America.

As suggested by the whims of fashion (q.v.) hats have undergone a wide variety of changes of shape. The raising of the top part in which the head is inserted, and the

HAT.

widening or diminishing of the brims, have constituted the chief differences. Sometimes the top has been high and narrow, sometimes high and widened; and the brim has sometimes been so broad as to be looped up. Political and religious differences have been marked by the form of hat. The Puritan of the reign of Charles I. adopted the steeple hat (fig. 3), high and narrow with a broad brim, and devoid of ornament, as the badge of his party. The Cavalier, during the same era, wore a lower and broader crown, with a feather stuck on one side (fig. 4). And a still lower-crowned hat, with a profusion of feathers, became the fashion in the reign of Charles II. The Quaker hat, low in the crown with a broad brim, and quite plain, dates from the origin of the sect at the middle of the 17th c. A growing extravagance in breadth of brim, led to the device of looping up the back and sides, and so was fashioned the cocked hat (fig. 1), worn by gentlemen throughout the 18th c. But in cocked-hat era there were exceptions to the fashion. Beaux, by way of singularity, wore low-crowned hats with brims (fig. 2), and these must be considered the precursors of the present round-hat, which finally superseded every variety of cocked-hat at the beginning of the 19th c. While cocked-hats ceased to be used by British common soldiers at the reform of military costume consequent on the war with the French Republic, officers in the army continued to a later period to wear that species of flattened cocked-hat known as the *chapeau*



Hats:

- 1, hat copied from a print of the year 1786; 2, large round hat worn in the year 1786; from Kay's *Etchings* (Edinburgh); 3, hat from a print dated 1645; 4, hat copied from Hollar's full-length portrait of 'Robert Devereux, Earle of Essex, his Excellency Lord Generall of the Army.'

bras—that is the hat which, by being flattened up, could be carried conveniently under the arm. This kind of hat was disused by regimental officers about 1812; but with slight variation in shape, it is still continued by field-officers in European armies.

Light, handy, and, in effect, adding height to the stature, the common round-hat is easily damaged, and quite unsuit-

HATCH.

table for rough wear in travelling or in the country. Therefore, there have been introduced a variety of undress hats, black and gray, and some of them of felt almost as soft as cloth: such are the Wideawakes, the Tom-and-Jerries, and an innumerable tribe of hats worn by sportsmen, tourists, and youths generally. With these exceptions, the round hat known as the 'silk hat,' with slight changes of form from time to time as suggested by fashion, continues to be the hat proper, worn for ceremonial dress. The low-crowned, rounded top, stiff hat of felt (known as the Derby, and by other names) is however in very extensive use, as a sort of convenient medium between the dress hat and the soft felt hat. The great centres of hat manufacture in the United States are Danbury, Conn., and Orange, N. J. The only professional hat in England is that of clergymen of the Established Church: it is a round-hat of fine beaver with a broad brim, which is looped up at sides and back, so as to form a kind of shovel, and is ordinarily known as the shovel-hat. During the 18th c., it was not unusual for gentlemen to wear gold-lace bands and edgings on their hats. This, like other fantastic decorations of attire, is now resigned to footmen and other domestic servants in livery, whose hats and other garments present a fair specimen of the dress of our foppish ancestors.

HATCH, *v.* *häch* [Sw. *häck*, a coop; *häcka*, to hatch, to breed: Ger. *hecken*, to peck, to hatch young; *hecke*, a hedge or fence, a time of breeding—*lit.*, to produce birds under a hatch or coop]: to produce young from eggs, as by a hen or by artificial heat; to contrive or plot: N. a brood; in *OE.*, disclosure; discovery. HATCH'ING, *imp.* HATCHED, *pp.* *hächt*. HATCH'ER, *n.* *-ër*, one who, or that which.

HATCH, *v.* *häch* [F. *hacher*, to hack—from *hache*, a hatchet: Norw. *hak*, a score or incision]: to shade or delineate by lines in drawing and engraving; to engrave. HATCH'ING, *n.* shading with a blacklead pencil or pen, or in engraving. *Note.*—*Etching* may only be a corruption of *hatching*.

HATCH, *häch*, EDWARD: 1832, Dec. 22—1889, Apr. 11: b. Bangor, Me.: soldier. He entered the vol. army 1861, Apr., was commissioned capt. 2d Io. cav. 1861, Aug., and promoted maj. Sep. 5, and lieut.col. Dec. 11 following; col. 1862, June 13; brig.gen. 1864, Apr. 27; brevetted maj.gen. 1864, mustered out of the vol. service and appointed col. 9th U. S. cav. 1866, and brevetted maj.gen. U. S. A. 1867. He was a noted cavalryman and Indian fighter.

HATCH, *v.* *häch*, and HATCHES, *n.* *plu.* *häch'ëz* [Dut. *hæck*, a hook; *heck*, a barrier, a grating: Low Ger. *haken*, to hook, to hold fast: Sw. *hack*, a hedge of branches: Fin. *hakki*, a hurdle made of wattles], a frame of cross-bars laid over an opening in the deck of a ship, or other opening; the opening itself—also called HATCHWAY, a half-door frequently grated. HATCH, *v.* to close, as with a hatch. HATCH'ING, *imp.* HATCHED, *pp.* *hächt*. HATCH'ES, *n.* *plu.* openings for exploring mines; flood-gates to stop

HATCH.

the course of water. UNDER HATCHES, *literally*, confinement as a criminal on board ship; *figuratively*, in a state of depression, poverty, or ignominy.—*Hatches* in a ship are square or oblong openings in the deck, forming the communications between one deck and another. The fore-hatchway is usually close abaft the foremast, the after-hatch-way between the main and mizen-masts, and the main-hatchway immediately before the main-mast. This last is ordinarily the largest, and through it goods are hoisted to and from the hold. In merchant vessels, especially barges, there are frequently other hatchways, according to the nature of the cargo; indeed, in some craft, the whole deck consists of hatchways. When used for passage-ways, a companion-ladder is placed from each hatchway to the deck below. These ladders are, however, generally limited to the fore and after hatches. As an officer or sailor emerges through the after-hatch, in ascending to the upper deck, he touches his hat in token of 'salute to the quarter-deck.' When not used for a passage-way the hatchway is covered by a wooden grating which admits air and sufficient light to those below, while it protects men operating above from accidental falls. During stormy or wet weather, these gratings are covered with tarpaulings, securely fastened, and the deck becomes water-tight. After an action by boarding, the conquered crew are often battened down in the lower decks, and then made prisoners as they are allowed to ascend through the hatchway one by one.

HATCH, JOHN PORTER: soldier: b. Oswego, N. Y., 1822, Jan. 9. He graduated at the U. S. Milit. Acad., 1845, served through the milit. occupation of Tex., and the Mexican and civil wars, and was promoted capt. 1860; appointed brig.gen. of vols. 1861, Sep. 28; promoted maj. and lieut.col. U. S. A., brevetted col. and brig.gen. U. S. A. and maj.gen. vols. 1865, Mar. 13, promoted col. 2d U. S. cav. 1881, June 26, and retired 1886, Jan. 9. He was an intrepid cav. raider, and was severely wounded several times during the civil war.

HATCH, RUFUS: financier: 1832, June 24—1893, Feb. 23; b. Wells, Me. He was brought up on his father's farm, received a village school education, went west 1851, and was employed with the corps of civil engineers surveying for the first railroad built in Wis. In 1854 he settled in Chicago, became a grain broker, and failed with heavy liabilities at the close of the Crimean war. In 1862, after paying in full and with interest his Chicago debts, he removed to New York, joined Henry Keep in heavy railroad operations, was elected managing director of the Pacific Mail Steamship Company, gave a memorable entertainment on board the steamer *City of Pekin* at Newport, and with the company was again financially ruined 1873. He then engaged in promoting the cattle industry in the west, recovered his losses, again paid his creditors in full and with interest, and resumed business in New York. He built the large hotel in the Yellowstone National Park, organized

HATCHEL—HATFIELD.

the company that built a fleet of iron pleasure steamboats in New York, and he contributed largely to church enterprises. He had the largest library of church music in the country. He was an accomplished organist.

HATCHEL, n. *häch'ël*, or HACKLE, n. *häch'l* [Ger. *heckel*; Dan. *hekel*, a heckle, a comb: a board set with iron teeth used for separating the finer parts of hemp and flax from the coarser; a large sort of comb]: V. to separate the finer from the coarser parts of flax or hemp by means of a hatchel; to tease or vex by sarcasms or reproaches. HATCH'ELLING, or HATCH'ELING, imp. HATCH'ELLED, or HATCH'ELED, pp. *-ëld*. HATCH'ELLER, or HATCH'ELER, n. *-ël-lër*, one who.

HATCHET, n. *häch'ët* [F. *hachette*, a small ax—from *hacher*, to hack]: a small sharp ax with a short handle. TO TAKE UP THE HATCHET, to make war. TO BURY THE HATCHET, to make peace. HATCHET-FACED, having thin, prominent features.

HATCHETINE, n. *häch'ët-in* [after Mr. *Hatchett*]: mineral tallow, a waxy or spermaceti-like substance of a greenish-yellow color.

HATCHIE RIVER, *häch'ē*: rising in the n.e. part of Mississippi, and emptying into the Mississippi river, near Randolph, about 25 m. above Memphis, Tenn. It runs through a fertile cotton region, and is navigable by small steamboats about 100 m. from its mouth.

HATCHMENT, n. *häch'mënt* [corrupted from *achievement*], (sometimes also ACH'IEVEMENT): funeral escutcheon placed in front of the house of the deceased, or elsewhere, setting forth his rank and circumstance. It is in the form of a lozenge, and in its centre are depicted the arms of the deceased, single or quartered. Its use is not prevalent except in countries where title and rank are recognized, and heraldry is scientifically studied.

HATE, v. *hät* [Swiss, *hatz*, anger: AS. *hettan*, to persecute: Icel. *hata*; Ger. *hassen*, to hate: Goth. *hatis*, anger: connected with HASTE]: to dislike greatly; to detest: N. hatred. HA'TING, imp. HA'TED, pp. HA'TER, n. one who. HAT'ABLE, a. *-ä-bl*, that may be hated. HATE'FUL, a. *-fúl*, exciting hate; odious; detestable. HATE'FULLY, ad. *-lĩ*. HATE'FULNESS, n. HATRED, n. *hät'trëd*, intense dislike or aversion; ill-will; enmity.—SYN. of 'hate, v.': to dislike; abhor; abominate; loathe;—of 'hateful': execrable; loathsome; malevolent; malignant; repugnant; abhorrent; abominable;—of 'hatred': aversion; antipathy; repugnance; rancor; malevolence; malice; odium; animosity; malignity; detestation; loathing; abhorrence.

HATFIELD, *hät'fëld*, or BISHOP'S HAT'FIELD: small market-town of England, county of Hertford, on the slope of a hill, 7 m. s.w. of the town of Hertford. It consists of one considerable street, crossed by a smaller one; its trade is unimportant. The palace was once the property of the bishops of Ely, but, together with the manor, was seized by Henry VIII., and was afterward successively the resi-

HATHRAS—HATTI-SHERIFF.

dence, before their accession, of Edward VI. and Queen Elizabeth. Hatfield House, built by Sir Robert Cecil, is a noble structure, and a fine specimen of Elizabethan architecture. The parish church is an old and interesting edifice of the 13th c. Pop. of parish about 4,000.

HATHRAS, or HATRAS, *hă-trăs'*: town of Hindustan in the N.W. Provinces, 33 m. n. of Agra, lat. 27° 36' n., and long. 78° 9' e. H. has a considerable trade, particularly in the cotton of the neighborhood. As a place of some strength, it was prominent in the wars of the Doab; but, 1817, falling into the possession of the British, it was immediately dismantled. Pop. about 30,000.

HAT MONEY: small duty or primage paid to the master of a ship for his care and trouble over and above the freight. The right to it is regulated entirely by custom of particular ports. The name is probably derived from the payment being originally gratuitous, and given to the master on going round with the hat at the end of a prosperous voyage.

HATTEMISTS, n. *hăt'ēm-ists* [named from their founder, Pontian *Van Hattem*, a Dutch divine]: in *chh. hist.*, a sect which sprang up in Holland in the 17th c. Hattem is said to have denied that the death of Christ was an expiatory sacrifice, and affirmed that in his teaching he simply signified to us that there was nothing in us which could offend God, and in this way he made us just; also that God punishes men by their sins, not for their sins. The sect afterward discarded the first name of Hattemists.

HATTER, v. *hăt'tér* [Scot.]: in *OE.* and *prov. Eng.*, to entangle; to weary out; to wear out; to harass: N. in *Scot.*, an irregular collection or assemblage of any kind, as 'a hatter of stanes,' a heap of stones. TO WORK AS HARD AS A HATTER, perhaps corrupted from 'hard as to hatter,' meaning to work so hard as to weary or wear out—the familiar saying thus having no connection with the trade of a hatter: the same explanation may be given to 'mad as a latter.'

HATTER: see under HAT.

HATTERAS, CAPE: see CAPE HATTERAS.

HATTI-SHERIFF, n. *hăt'ti-shēr'if* [Turk.—from Ar. *hatkt*, a writing, and *sherif*, noble], (sometimes called HATTI HUMAYUN): name given by the Turks to every rescript of the sultan. The hattî-sheriffs are composed in the Turkish language, and written in the Arabian court-hand *Diváni*. Above the text, as a token of the authenticity of the rescript, stands the intricate flourish or mark of the sultan, usually in black, but sometimes in red or gold. This flourish is called *Tugra* or *Rishâni Sherif*—i.e., exalted sign; and the functionary who superscribes it is called *Rischând-schi*, or the signer. The hattî-sheriff is irrevocable. That of *Gulhana*, promulgated by *Abdul Medjid*, 1839, Nov. 3 (renewed 1856, Feb. 18), which guarantees life and property to all subjects of the empire without distinction of creeds, has in modern times obtained the widest celebrity.

HATTO I.—HAUCH.

HATTO I.: abt. 850–913; of a Swabian family: 10th archbishop of the see of Mainz. He was abp. from 891 till his death. When Emperor Arnulf died. H. became regent.

HATTO II.: archbishop of Mainz: d. 969 or 70. He was a monk of the monastery of Fulda, and succeeded the celebrated Rabanus Maurus, as abbot of the monastery of St. Boniface, about 942. In the second expedition of the emperor Otho I. into Italy, 961, H. was sent as his ambassador from Pavia to Rome; and after his return, he was raised to the see of Mainz, and continued one of the chief directors of the imperial counsels. Of his after-life, and of his personal character, opposite accounts have been given. By some he is represented as a zealous reformer, and an upright and successful administrator; by others, as a selfish and hardhearted oppressor; and the strange legend of his being devoured by rats, which Southey has perpetuated in his well-known ballad of *Bishop Hatto*, is represented as an evidence of the popular estimate of him. It is probable, however, that this legend is of much later date, and that its real origin is to be traced to the equivocal designation of the tower on the Rhine, *Maüsethurm*, near Bingen, selected as the scene of the occurrence. *Maüsethurm*, Mouse-tower, is probably only a corrupted form of *Mauththurm*, Toll-tower, a sufficiently descriptive name; but the modified form of the word might readily suggest a legend of mice or rats. The date at which the *Maüsethurm* was built is unknown, It was stormed by the Swedes 1635, nearly seven centuries later than H.'s time.

HATZFELD, *hâts'fëlt*: small town of Austria, in the Temeser Banat, 24 m. w. of Temesvar, on the railway between that town and Pesth. The breeding of horses is here extensively carried on, and there is large trade in corn. Pop. (1869) 7,981; (1880) 8,621; (1890) 9,580.

HAUBERK, n. *häu'bërk* [OF. *hauberc*; AS. *healsbeorg*, a coat of mail—from *heals*, the neck; *beorgan*, to cover or defend]: coat of ringed or twisted mail for the neck and chest; sometimes extending only as high as the neck, but generally continued to form a coif, leaving only the face of the knight who bore it exposed. It often descended as a tunic below the knees. In early times, the sleeve of the hauberk sometimes terminated at the elbow, but in the 13th and 14th c. it came down to the wrist, and usually descended over the hand in the form of a glove, either one fingered or divided. In the 14th c. the hauberk was worn under plate armor. See **HABERGEON**.

HAU'BERT: old term in feudal law, to denote the tenure of ward and relief.

HAUCH, *how'ch*, **HANS CARSTEN**: 1790, May 12—1872; b. Frederikshald, Norway: one of the best Danish poets of the 19th c. He graduated at the Univ. of Christiania 1821; and after having travelled through Germany, Italy, and France, settled at Copenhagen 1827, and was appointed prof. of physics at the Royal Acad. of Soroe, in Denmark. This post H. exchanged 1846 for the chair of northern literature in the Univ. of Kiel, but on the breaking

HAUGH—HAUGIANS.

out of the Schleswig-Holstein revolution, two years afterward, he was compelled to return to Copenhagen, where the dowager queen, Maria Sophia, offered him an asylum at the palace of Frederiksborg, where he resided several years; and on the death of his friend Oehlenschläger, 1850, he succeeded him in the chair of æsthetics at the Univ. of Copenhagen. H.'s tragedies, *Tiberius og Bajazet*, *Gregory VII.*, and *Don Juan* (1829) at once established his reputation, which he fully maintained by his subsequent dramas, *Karl den Femten's Død* (Death of Charles V.), *Mastricht's Belejring* (Siege of Maestricht), *Svend Grathe* (1841), and *Mursk Stig* (1850). Many of his pieces were translated by himself into German, and were represented with success at the principal theatres of Germany and Sweden. H.'s dramatic epic, *Hamudryaden*, which belongs to the ultra romantic school, had less favor among his own countrymen than in Germany; but his *Lyriske Digte*, 1842 (Lyrical Poems), some of which are extremely beautiful, have undisputed popularity in Denmark. As a writer of tales and Romances, H. showed considerable diversity of talent; the principal are—*En Polsk Familie* (A Polish Family), *Slottet ved Rhinen* (The Castle on the Rhine), and *Guldsmagern* (The Goldsmith, 1836–45), *Saga om Thorwald Vidfæslé* (1849), *Nordische Mythologie*, *Waldemar Seier* (1862), etc. His *Robert Fulton* (1853) is regarded as the most perfect of his works. H. died at Rome.

HAUGH, n. *haw* [Gael. *auch*, a meadow: AS. *haga*, a hedge: Ger. *hag*, a fence]: in *Scot.*, a little low-lying meadow.

HAUGHT, a. *hawt*: OE. for HAUGHTY, which see.

HAUGHTY, a. *haw'ti* [F. *hautain*, haughty—from *haut*; OF. *hault*, high—from L. *altus*, high]: proud and disdainful; arrogant. HAUGH'TILY, ad. *-li*. HAUGHTINESS, n. *-nès*, pride mingled with some degree of contempt for others; arrogance.—SYN. of 'haughtiness': superciliousness; disdain; contemptuousness; loftiness; highmindedness; —of 'haughty': proud; insolent; contemptuous; bold; adventurous; high; lofty.

HAUGIANS, *how'gǝ-anz* (Ger. HAUGIANER or LESER): members of a sect founded by Hans Nielsen Hauge (1771, Apr. 3—1824, Mar. 29; b. Thuno, Norway) within the Lutheran Church in Denmark and Norway; now almost wholly confined to Norway. Hauge was born and brought up on a farm, received a very limited education, became a zealous student of the Bible, and engaged in missionary labor in Norway 1796, and Denmark 1800. He was a powerful preacher; but, opposing ordination, creed, and other doctrines of the church, brought himself into conflict with the regular clergy. He opened a printing establishment in Christiansand, but his books were seized and confiscated. In 1804 he was arrested for holding illegal meetings and insulting the clergy, and after being imprisoned 10 years was released on paying a fine. Though differing with the Lutheran Church in some points of doctrinal belief, **neither he nor his followers wholly separated from it.**

HAUL—HAUPTMANN.

HAUL, *v.* *hawł* [F. *haler*, to haul: Ger. *holen*, to fetch; Dut. *haelen*, to send for, to fetch]: to pull or draw with force; to drag; to transport by drawing; in *nav.*, to pull upon a rope directly; to change the direction of a ship's course: *N.* a catch, as of fish; a pull; among *ropemakers*, a bundle of about 400 threads to be tarred. **HAUL'ING**, *imp.* **HAULED**, *pp.* *hawłd.* **HAUL'ER**, *n.* one who. **HAULAGE**, *n.* *hawł'āj*, the act of pulling or dragging, as a railway engine the carriages; the dues paid for pulling or dragging, as to a steam-tug. **TO HAUL OVER THE COALS**, to charge with a fault or misdemeanor, not exactly criminal, with a view to reparation—referring probably to the anc. ordeal of fire. **TO HAUL THE WIND**, to turn the head of the ship closer to the direction of the wind.—**SYN.** of 'haul, *v.*': to pull; draw; tug; pluck.

HAULM, *n.* *hawm*: see **HALM**.

HAUNCH, *n.* *hânsh* [F. *hanche*; OF. *hanke*, the hip—from O.H.G. *ancha*, or *encha*, the leg, the haunch: O.H.G. *hlanča*, the flank]: the hip; the part of a man or quadruped which lies between the last ribs and the thigh; a joint of mutton or venison; the hind part; in an arch, the part between the vertex and springing.

HAUNT, *n.* *hânt* [Bret. *hent*, a way: Bret. *henti*; F. *hanter*, to frequent, to haunt]: a place of frequent resort: *V.* to resort much or often to; to trouble with frequent visits; to visit, as a spirit or ghost; to be much about. **HAUNT'ING**, *imp.* **HAUNT'ED**, *pp.*: **ADJ.** frequently visited, especially by ghosts or apparitions; subject to the visits of. **HAUNT'ER**, *n.* one who.

HAUPT, *howpt*, **HERMANN**: engineer: b. Philadelphia, 1817. Mar. 26. He graduated at the U. S. Milit. Acad. 1835. He was chief engineer of the Hoosac Tunnel, Mass., 1856-61, and chief of bureau of U. S. military railroads in charge of construction and operation in the civil war. In 1875-78 he established the system of pumping kerosene oil long distances through pipes.

HAUPT, **MORITZ**, or **MORIZ**: 1808, July 27—1874, Feb. 5; b. Zittau, Lusatia, Germany: philologist. He graduated at the Univ. of Leipsic 1830, became a private tutor and lecturer 1837, prof. extraordinary of German language and literature in the Univ. of Leipsic 1841, and prof. ordinary 1843, and was deprived of his office for taking part in the political agitation of 1849. In 1853 he succeeded Dr. Lachman as prof. of classical literature in the Univ. of Berlin, and 1861 was chosen sec. of the Berlin Acad. of Sciences.

HAUPT, **PAUL**: an American educator; b. in Görlitz, Germany, 1858, Nov. 25; was graduated at the Gymnasium Augustum, Görlitz, 1876; afterward studied at the universities of Berlin and Leipzig and the British Museum; was tutor at the University of Göttingen, 1880-83; and became professor of Semitic languages and director of the Oriental Seminary, Johns Hopkins University, 1883. He is the author of *Akkadian and Sumerian Cuneiform Texts in British Museum*; etc.

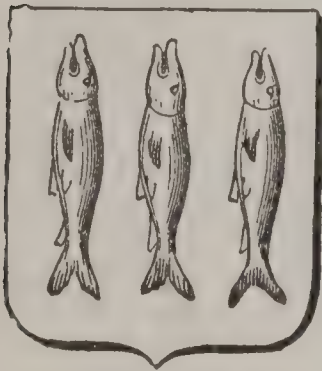
HAUPTMANN, *howpt'mân*, **MORITZ**: 1792, Oct. 13—

HAUPUR—HAUSER.

1868, Jan. 3; b. Dresden, Germany: composer. He studied mathematics and architecture with his father, music with Scholz, Lauska, Grosse, and Morlacchi, and completed his education as a violinist and composer with Spohr. In 1812 he became a violinist in the royal orchestra of Dresden, 1822 entered the Cassel orchestra under Spohr's leadership, remained there till 1842, and in that year was appointed cantor at the Thomas School, Leipsic, prof. of counterpoint and fugue at the newly-established conservatory, and musical director in the churches of St Thomas and St Nicholas. He composed a tragic opera, two masses, and numerous choral and part songs, and was widely esteemed as a teacher.

HAUPUR: see HÁPUR.

HAURAN, *hâ-ô-rân'* or *how-răn'*: district in Syria, e. of Jordan and s. of Damascus; in the Greek and Roman period one of the 4 provinces of Bashan (q.v.); according to Arabic geographers the greater part of the ancient Bashan. Its present dimensions and population are unknown.



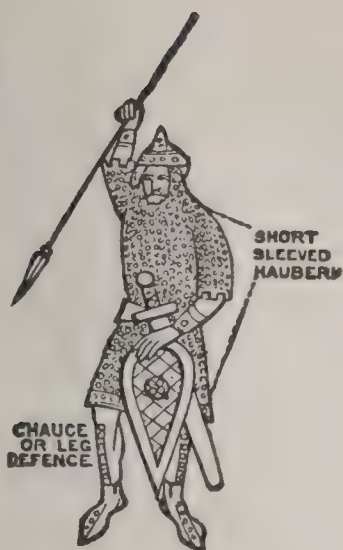
Hauriant.

Travellers report a fertile, volcanic country, remains of hundreds of ruined towns, an abundance of Greek inscriptions and a large Druse population. H. was the appointed n.e. boundary of the Holy Land after the captivity in Babylon (See only mention in the Old Test., Ezek. xlvii, 16, 18.

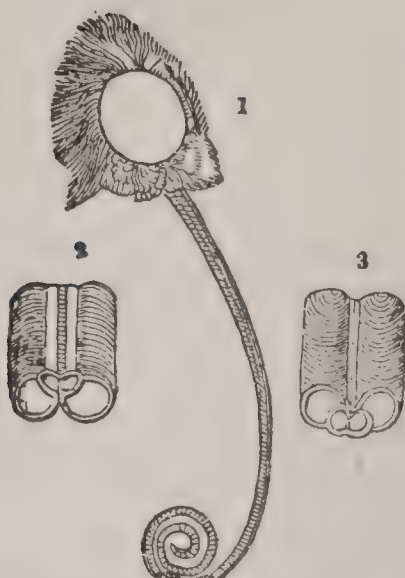
HAURIANT, *haw'rĭ-ant*: in heraldry, applied to a fish placed upright as if to refresh itself by sucking air.

HAURL, or HARLE, v. *hârl* [Scot.]: to rough-cast a wall with a mixture of lime and gravel. HAUR'LING, imp. HAURLED, pp. *hârlĭd*.

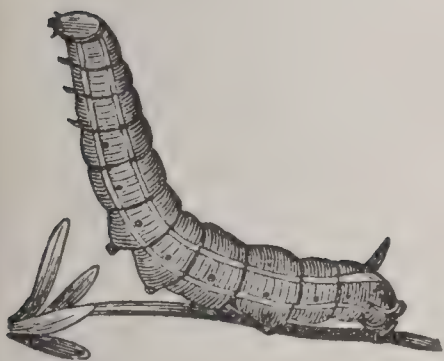
HAUSER, *how'zër*, KASPAR: the foundling of Nuremberg, found by a citizen of that town in the market-place, 1828, May 20, between four and five o'clock in the afternoon. He was dressed like a peasant boy, and had with him a letter addressed to the captain of the sixth regt. of horse at Nuremberg. Being conducted to this officer and interrogated, it soon became evident that he could speak very little, and was almost totally ignorant. To all questions he replied 'Von Regensburg' (from Regensburg), or 'Ich woais nit' (I don't know). On the other hand he wrote his name in firm legible characters on a sheet of paper, but without adding the place of his birth, or anything else, though requested to do so. H. was then by his appearance, 16 or 17 years old. Though short and broad shouldered, his figure was perfectly well-proportioned. His skin was very white; his limbs delicately formed, the hands and feet small and beautiful, the latter, however, showing no marks of his having ever worn shoes. With the exception of dry bread and water, he showed a violent dislike to all kinds of meat and drink. His language was



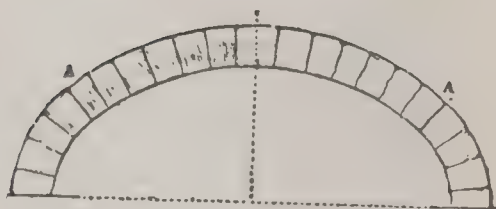
Hauberk.



Haustellata.—Haustellum of the Hawk-moth: 1, Head of moth, with proboscis extended. 2, 3, Sections of proboscis, showing its structure—2, as viewed from above; 3, from below.



Caterpillar of Humming-bird Hawk-moth (*Macroglossa stellatarum*).



A, A, Haunches of an Arch.



Humming-bird and Humming-bird Hawk-moth (*Macroglossa stellatarum*).

confined to a few words or sentences in the old Bavarian dialect. He showed entire ignorance of the most ordinary objects, and great indifference to the conveniences and necessities of life. Among his scanty articles of clothing was a handkerchief marked K. H.; he had likewise about him some written Rom. Cath. prayers. In the letter which he carried, dated, 'From the confines of Bavaria, place unknown, 1828,' the writer stated himself to be a poor day-laborer, the father of ten children, and said that the boy had been deposited before his door by the mother, a person unknown to the writer. He stated further that he had brought up the boy secretly, without allowing him to leave the house, but had instructed him in reading, writing, and the doctrines of Christianity; adding that it was the boy's wish to become a horse soldier. The letter inclosed a line, apparently from the mother, stating that she, a poor girl, had given birth to the boy, 1812, Apr. 30; that his name was Kaspar; and that his father, who had formerly served in the sixth regt., was dead. H. was treated by the magistrates of Nuremberg as a destitute boy, and became the object of general sympathy. Binder, a burgomaster, exerted himself, in particular, to throw some light on the obscurity of his origin. In the course of many conversations with him, it came out that H., from his childhood, had worn only a shirt and trousers; that he had lived in a dark place underground, where he was unable to stretch himself out at full length; that he had been fed on bread and water by a man who did not show himself, but who cleaned and dressed him, and provided him with food and drink while he was in a state of natural or artificial sleep. His sole occupation was playing with two wooden horses. For some time before he was conveyed to Nuremberg, the man had come oftener to his dungeon, and had taught him to write by guiding his hand, and to lift his feet and walk. This narrative gave rise to various suppositions and rumors. H. was, according to some, the natural son of a priest, or of a young lady of high rank; while others believed him to be of princely origin, or the victim of some dark plot respecting an inheritance. Some incredulous persons believed the whole affair to be an imposition. 1828, July 18, H. was given to the care of Prof. Daumer. The history of his education is remarkable in a pedagogic view, as his original desire for knowledge, his extraordinary memory, and acute understanding, decreased in proportion as the sphere of his knowledge extended. His progress was on the whole, small. 1829, Oct. 17, he was found bleeding from a slight wound on the brow, which he said had been inflicted by a man with a black head. All efforts made to discover the perpetrator were ineffectual. The incident excited a great sensation; H. was conveyed to the house of one of the magistrates, and constantly guarded by two soldiers. Among many strangers who came to see him was Lord Stanhope, who became interested in him, and sent him for education to Anspach. Here he was employed in an office of the court of appeal, but was not distinguished for industry, and was gradually forgotten till his death again ex-

HAUSMANIZE—HAUSTELLATE.

cited attention. A stranger under the pretext of bringing him a message from Lord Stanhope, and informing him of the circumstances of his birth, invited H. to meet him in the palace garden 1833, Dec. 14, at three o'clock in the afternoon, and stabbed him in the left side. H. had sufficient strength left to return home and relate the circumstances of his assassination, but died Dec. 17. Compare Daumer, *Mittheilungen ueber Kasper Hauser* (2 vols. Nuremb. 1832); Feuerbach, *Kasper Hauser, Beispiel eines Verbrechens am Seelenleben* (Ansbach, 1832); *Allgemeine Zeitung*, 1875, June 3.

HAUSMANIZE, v. *haws-man-iz* [after M. Haussmann, Prefect of the Seine under Napoleon III.]: to improve by carrying out public works, as in Paris under Baron Haussmann.

HAUSMANNITE, n. *haws'măn-nīt* [after *Hausmann*]: a mineral; native red oxide of manganese.

HAUSSE, n. *haws* [F.]: a kind of breech-sight for a cannon.

HAUSSE, a. *hōs'sā* [F.]: in *her.*, term applied to any ordinary when removed from its proper position and placed higher up in the field.

HAUSSMANN, *ōs-mōng'*, GEORGES EUGENE, Baron: French senator and administrator: b. Paris, 1809, Mar. 27. He was educated at the conservatory of music, became a lawyer, and after holding several prefectures under the presidency of Louis Napoleon was appointed prefect of the Seine after the establishment of the empire. In this office he projected and executed a system of public improvements which transformed Paris into a new city, cost \$154,000,000 (to 1870), and included the improvement of the Bois de Boulogne, the lengthening of the Rue de Rivoli, the construction of the Boulevard de Sebastopol and of more than 20 boulevards in the old parts of the city, various public gardens, squares, barracks, the Halles Centrales, new prefecture of police, more than 12 bridges, numerous hospitals and asylums (notedly the Hôtel Dieu), and other public works. In 1869 he was charged with having raised more money than had been authorized, but on an examination of his accounts an additional loan of \$52,000,000 was sanctioned. He was created senator 1857, elected member of the Acad. of Fine Arts 1867, removed from office 1870, appointed director of the Credit Mobilier 1871, and has been elected a member of the chamber of deputies several times since. He died Jan. 13, 1891.

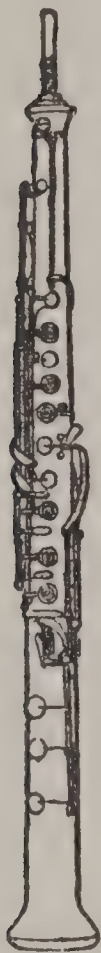
HAUSTELLATA, n. *haws-těl-lā'ta* [L. *haustus*, a drawing, used chiefly of water or other liquid]: in *entom.*, an extensive sub-class of insects consisting of those which take nothing but fluid aliment, having the organs of the mouth adapted solely for suction, in contrast to the *Mandibulata*, which have mandibles, or upper jaws; in *zool.*, a sub-class of crustaceans more commonly called *Epizoa* (q.v.).

HAUSTELLATE, a. *haws'těl-āt* [mid. L. *haustel'lum*, a sucker—from *hauriō*, I draw water]: provided with a

HAUTBOY—HAUT-GOUT.

sucker. HAUSTO'RIMUM, n. -tō'rī-ŭm [mid. L. *haustōrium*, a drinking-place, a well]: the sucker at the extremity of the parasitic root of dodder.

HAUTBOY, or HAUTBOIS, or OBOE, n. hō'bōy or ō'bōy [F. *hautbois*—from *haut*, high, *bois*, wood—from L. *altus*, high; mid. L. *boscus*, a bush]: wind instrument of the 'reed' genus. On account of its piercing sound, it was much used in military bands, in the middle of the 17th c., for playing the melody, and from it the whole band used in Germany to be called *Oboisten*. The H., at an early date, took its place as one of the essential instruments of the orchestra. It is made of wood, generally of box, ebony, cocoa, or rosewood, and is constructed in three pieces, or joints, forming a continuous tapering tube, about 21 inches long, the bore of which is narrow at the small end, and widens into a bell-shaped opening, 1½ inch in diameter, at the mouth. In the upper and middle piece there are holes by stopping or opening which with the fingers, the player forms the notes of the natural scale, the intermediate semitones being formed by the keys. The reed is fixed upon the end of a small brass tube which fits, socket-wise, into the small end of the upper piece. The sound of the H. is rich; and from its great power in swelling or diminishing the sound, it is capable of every variety of expression. Originally, it had but two keys, but others have from time to time been added, till the number is now usually 15, sometimes more. Its ordinary scale is that of C natural, but by



Hautboy:
Boehm's
System.

means of the keys it can be played in every key with facility. Its range of available notes is from B to G in alt. Triebert of Paris is now the most celebrated maker.

H. is also the name given by organ-builders to a reed stop of eight ft. tone, made of metal, similar in shape to the real H., and intended to imitate it in its sound. Its reed is made of thin brass. In all English and many American organs it is an indispensable stop in the swell, where it is most effective. It is only a treble stop, of which the bass is the bassoon. In European continental organs it is found of various scales, and when very fine, is called the *Oboe d'amour*.

HAUTBOY, hō'bōy: a large sort of strawberry, having long stalks; the *Fragaria elatior*, ord. *Rosaceæ*.

HAUTE GARONNE' (and in similar French titles—with HAUTE or HAUT): see GARONNE, HAUTE, etc.

HAUTEUR, n. hō-tēr' [F. *hauteur*, height—from *haut*, high—from L. *altus*]: haughtiness; insolent manner or spirit.

HAUT-GOUT, hō-gó [F.—from *haut*, high; *goût*, taste—

HAÛY—HAVANA.

from *L. gustus*, taste, flavor]: high seasoning; high relish or flavor.

HAÛY, *á-wē'*, RENÉ JUST: 1743, Feb. 28—1822, June 3; b. St. Just, Picardy: French mineralogist. He studied for the priesthood, and took priest's orders. His attention was early turned to botany, but it was not until he was 38 years of age that, in consequence of accidentally hearing Daubenton lecture on the subject in the Jardin des Plantes, he commenced the study of mineralogy. Linnaeus had already shown that the regular form of crystals is due to the action of forces which obey definite laws, and Romé de Lisle had ascertained that the angles are constant in different crystals of the same variety; but the true laws of crystallization remained unknown until H. was led to their discovery by a fortunate accident. See his memoirs on crystallography and mineralogy, amounting to about 100, published 1782–1821. (For their titles and dates, see Poggendorff's *Biog. Liter. Handwörterbuch*, pp. 1038–40.) His most important works are his *Traité de Mineralogie* (Paris 1801, 4 vols. with atlas), 2d ed. 1822–3; *Traité Elementaire de Physique* (Paris 1804, 2 vols.), 3d ed., 1821; *Traité des Caractères Physiques des Pierres Précieuses*, 1817; and *Traité de Crystallographie*, 2 vols. with a vol. of plates, 1822. He was a contributor to the *Encyclopédie Méthodique*, and the *Dictionnaire d'Hist. Nat.* For H.'s narrow escape during the revolution, see the memoir of Geoffroy Saint-Hilaire. In 1793, he was appointed on the Commission of Weights and Measures; 1794, conservator of the Cabinet des Mines; 1795, teacher of physics at the Normal School; finally, 1802, he was appointed prof. of mineralogy in the Museum of Natural History and in the Faculty of Sciences. He was an honorary canon of Notre Dame, and is, in consequence, generally known as the Abbé Haüy. He died leaving no wealth beyond the collection on which he had based his great discoveries, and which is now preserved in the Jardin des Plantes. Though his latter years were clouded by poverty, his characteristic cheerfulness and serenity were unfailing.

HAUYNE, n. *how'in* [after M. Haüy]: one of the haloid minerals of a fine azure-blue color; a silicate of alumina and soda, with sulphate of lime.

HAVANA, *ha-văn'a*, or HABANA, *hâ-bá'na* [Eng. *The Harbor*]*—*in full, San Cristobal de la Havana: city, cap. of the island of Cuba, on an inlet of the Gulf of Mexico on the n. shore of the island; lat. 23° 8' n., long. 82° 22' w. It has one of the finest harbors in the world, to which entrance is gained through a narrow channel three-eighths of a m. long, which opens into a large basin or inner harbor sufficient in dimensions and depth of water to accommodate nearly 1,000 vessels of any size, and provided with capacious and substantial wharves. The outer harbor is defended by Morro and Punta castles, La Cabana citadel, and other fortifications. H. is divided into the old or walled town and the new one beyond, and its most attractive part is the great public square—La Plaza de Armas—

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and its vicinity. After this are the *Alemeda de Paula*, skirting the bay, the *Parque de Isabel*, and the magnificent drive, the *Paseo de Tacon*. On the w. side of the *Plaza de Armas* is the governor's palace, a two-story colonnaded building painted yellow, and opposite that is the pretty chapel, *El Templete*, built on the spot where the first mass was celebrated after the removal of the city to its present site. The Rom. Cath. cathedral, foremost among the public buildings, was erected 1724, and used as a college by the Jesuits till 1789. The ashes of Christopher Columbus are popularly supposed to have been transferred from the cathedral at San Domingo to that at H. 1795, but many historians believe the true remains were never disturbed. (See COLUMBUS, CHRISTOPHER). H. contains 15 other churches, 9 attached to monastic orders, 2 San Catalina and San Juan de Dias, dating from the 16th c., one, San Augustine, from the beginning of the 17th c.; all noted for richness and splendor of decorations. Other public buildings of note are the *Tacon* and *La Paz* theatres, *Louvre*, and the world-famed *Casino* club-house. The architecture of the business houses and residences is almost identical with that of s. Spain. The houses are usually of stone, with thick walls and tessellated floors, two stories in height, with flat, tiled roofs, which form the family rendezvous in hot evenings. Every prominent dwelling has covered verandas to which the apartments open directly, and a *pateo*, corresponding to the Mexican court-yard, in which there are usually a fountain and an abundance of flowers and plants. About 50 public fountains are scattered over the city. H. has a univ. and many educational institutions, a superb botanical garden, and numerous scientific and charitable establishments. It is lighted with gas and electricity, has railroad connections with Cardenas, Matanzas, Santiago, and other important places on the island; submarine cable to Fla. and Jamaica, and steamship communication weekly with the United States, Spain, France, and England. The chief industry is the manufacture of tobacco in various forms, for which there are over 100 first-rank factories. Sugar, molasses, and rum follow respectively in importance; and honey, wax, rice, preserved fruit, etc., are noted among the exports. The principal imports are jerked beef, salt-fish, flour, hardware, and piece-goods. Pop. (1902) 275,000.

The failure of the Spanish authorities to subdue the Cuban insurgents, and the inhuman treatment of the inhabitants who had been concentrated near the cities, and then reconcentrated by the orders of Captains-General Weyler and Blanco during the years 1896-98, ultimately led to the interference of the United States in Cuban affairs. The lack of proper sanitary precautions bred disease among the people. In some cities the filth lay ankle deep on the streets. The huts were occupied by three times as many persons as they could accommodate. The cavalry barracks were generally in their vicinity, and these, owing to the criminal carelessness of the troopers, were left in a terrible state of uncleanness which was a menace to health.

Of the condition of the "reconcentrados," as the unhappy natives, driven into the military zones to starve, were called, a disinterested visitor wrote: "Gaunt, hollow-eyed, half-clad in rags, they sat listless and hopeless, too dejected even to lift their eyes when money or food was handed them." The children, covered with sores, or with skins drawn drum-tight over their emaciated bodies so that their ribs almost burst through, wailed piteously with pain, clenching their little fists as if to bear it with more fortitude or at least with determination. The country once devastated, the food supply was almost entirely cut off; in fact it became so scarce that what once was destitution and want became misery and starvation. This was the brutal treatment allotted to once prosperous natives by the policy of extermination inaugurated by Weyler and continued by his successor. While he as representative of the Spanish crown was living in luxury in H., more than 125,000 human souls perished from starvation and disease under conditions so horrible that the civilized world shuddered at their contemplation.

The provisions of the treaty between the United States and Spain regarding the detention of American citizens, some of whom had been thrown into prison and kept there without communication with their friends for months, were openly violated by Captain-General Weyler, who declared that his proclamation of martial law superseded the treaty. The American consul-general denied the right of the Spanish authorities to incarcerate citizens of the United States without trial, and detain them indefinitely, and protested vigorously against the practise. At this time an American named Scott was in prison under just such circumstances, and no sooner did this come to Consul Lee's knowledge than he demanded his immediate release in words that left no doubt of their meaning. These events caused hostile demonstrations against the Americans by the Spanish troops stationed at H. 1898, Jan. The outbreak commenced on the 15th and continued for some days. The captain-general found it necessary to place a military guard around the United States consulate. So critical did the situation become that it was deemed expedient by the U. S. government to order a warship to proceed to H. harbor, and on Jan. 24 the battle-ship *Maine* sailed from Key West, where the North Atlantic squadron was concentrated, for H., ostensibly on a friendly visit, but probably to afford protection to American residents in the event of further riotous outbreak. Arriving on the 25th, the *Maine*, after saluting the Spanish flag, anchored off the arsenal and remained there till Feb. 15, when she was blown up by a submarine mine and 260 lives were lost. On the 16th the Spanish authorities expressed regret for the disaster, and two days later the U. S. government appointed a court of inquiry to investigate the destruction of the vessel. This court made a searching investigation and on March 21 reported that the loss of the *Maine* was not in any respect due to fault or negligence on the part of any of the officers or members of her crew; that the ship was destroyed by the explosion of a submarine mine, which caused the

HAVE.

partial explosion of two or more of her forward magazines; and that no evidence had been obtained by which the responsibility for the disaster could be fixed.

Another incident which raised a storm of indignation was the publication of a letter containing insulting references to the American president and written by the Spanish minister at Washington, Señor De Lôme. This letter, written to Señor Canalejas at H., was stolen from the mail by a Cuban sympathizer and published on Feb. 9. Relations between the two countries became so strained that Consul-General Fitzhugh Lee advised the recall of all American consuls and the holding back of the president's message (ready Apr. 4) until they and the other American residents were in safety. On the 9th Lee left H., and the message was sent to Congress two days later. The sending of his passports to the U. S. minister at Madrid on April 21 by the Spanish government was the first official hostile act of Spain. On the next day the United States declared a blockade of all Cuban ports, and the forts defending H. harbor opened a non-effective fire on the American fleet. The torpedo-boat *Ericsson* captured the Spanish schooner *Mathilde* under the guns of Morro Castle, one of the defenses of H., and put a prize crew aboard. This success was followed up by the monitor *Terror*, which captured the Spanish steamship *Guido* while attempting to force the blockade. The next vessel seized was the French transatlantic steamer *La Fayette*, May 5, which attempted to sail into H. On the same day several Spanish schooners were also captured. For two months no war-vessel sailed out of the blockaded port, but July 6 the Spanish cruiser *Alfonso XII.* attempted to escape and was sunk. Less than six weeks later, the Spanish government having signed a peace protocol Aug. 12, hostilities ceased. Evacuation commissions were appointed soon after, and the American commission arrived Sept. 20 and hoisted the American flag over the Trocha Hotel—the first American flag to fly in H. since the departure of the consul-general five months before.

With the withdrawal of the Spanish troops the sovereignty of Spain over Cuba ceased at 12 o'clock noon, 1899, Jan. 1, and the United States flag was hoisted over the governor's palace of H. and the forts. On 1902, May 20, 12 m. the American flag was hauled down from Morro Castle and replaced by the new Cuban standard and the Republic of Cuba was born. On the same day Thomas Estrada Palma was inaugurated the first president.

HAVE, v. *hǽv* [Goth. *haban*; AS. *habban*; Icel. *hafa*; Ger. *haben*; L. *habēre*, to have]: to possess or hold; to enjoy; to be under necessity or impelled by duty, as you will *have* to do it; to desire, as 'I *had* rather be a door-keeper in the house of my God'; to buy; to hold opinion; to bring forth. **HAV'ING**, imp.: N. in *OE.*, the act or state of possession; possessions; fortune. **HAV'INGS**, n. plu. belongings. **HAD**, pt. and pp. *hād*. **TO HAVE AT**, to assail; to attack. **TO HAVE ON**, to wear, as dress. **TO HAVE IT OUT**, to come to an explanation; to speak one's mind. **Note.**—When used as an auxiliary, the completion of the

HAVEL—HAVELOCK.

sense is expressed by the verb which follows. **TO HAVE A CARE**, to take care; to guard. The phrase, *I had rather*, is generally regarded as a corruption of *I'd rather*—that is, *I would rather*; but this supposition appears somewhat gratuitous, seeing that *I had rather* is an old and correct Eng. phrase, though similar in meaning with *I would rather*. **HAVE AFTER**, or **WITH**, or **AT**, in *OE.*, done! agreed!—**SYN.** of 'have': to own; obtain; take; hold; maintain; accept; wish; desire.

HAVEL, *há'vél*: river of n. Germany, a considerable tributary of the Elbe. Its origin is in a small lake a mile w. of the town of New Strelitz, Mecklenburg. It flows s. to Potsdam, thence w. and n.w. to its junction with the Elbe, opposite Werben; entire length 218 m.; navigable to Furstenberg, a town within 30 m. of its source. The H., which throughout a considerable part of its course is the connecting link to a long chain of lakes, is of great importance to the internal trade of Prussia. Of its affluents, the Spree, which is longer than the H., is the only one worthy of mention.

HAVELOCK, n. *háv'lők* [named after Gen. *Havelock*]: a light covering for the head and neck worn by soldiers as a protection against sunstroke.

HAVELOCK, *háv'eh-lők*, Sir **HENRY**, K.C.B., Major-General: 1795, Apr. 5—1857, Nov. 24; b. Bishopwearmouth, Durham, England; son of a merchant and ship-builder. He entered the army a month or two after the battle of Waterloo, went to India 1823, and gained distinction in the Afghan and Sikh wars. In 1854 he was made adj.gen. of the troops in India, and 1856, he commanded a division of the army that invaded Persia. While in that country, he heard of the Indian mutiny, and hastened to Calcutta. He was directed to organize a small movable column at Allahabad, and to push on to the relief of the British at Cawnpore and Lucknow. He made a forced march to Futtehpûr, where, at the head of 2,000 men, he engaged and broke the rebels, 1857, July 12. He continued his march on Cawnpore, and twice defeated the enemy—first at Aeng, and then at the bridge over the Pandu Nuddi, 8 m. from Cawnpore. The consequence of the latter victory was the massacre of all the European women and children in the hands of Nana Sahib. H. had another battle to fight at Ahirwa, where the rebels were strongly entrenched. He turned their left, and the 78th Highlanders carried the village in a splendid charge. He then entered Cawnpore, where he and his men beheld the mutilated bodies of the European women and children. The sight steeled their hearts, and the avenging column quitted Cawnpore to advance on Lucknow. H. crossed the Ganges, and repulsed the rebels at Unao, and afterward on the same day at Busserut Gunge. After eight battles with the rebels, in all of which he was victorious, his little army found itself so thinned by fatigue and sickness, that it was compelled to retire on Cawnpore. Early in Sep., Gen. Outram arrived with reinforcements

HAVEN.

and H. again advanced to the relief of Lucknow; Outram, with chivalrous generosity, refusing to take the command out of his hands. H.'s relieving force, which mustered 2,500 men and 17 guns, routed the enemy at Mungulwar, and next engaged them at the Alum Bagh, an isolated building, about three miles from the residency of Lucknow. H. and his column, with desperate bravery against overwhelming numbers of the enemy, fought their way through streets of houses, each forming a separate fortress, until they gained the Residency, Sep. 25, to the indescribable joy of the beleaguered garrison. The victorious army were now in turn besieged, but held their own until Nov., when Sir Colin Campbell (now Lord Clyde) forced his way to their rescue. After the relief of Lucknow, H. was attacked by dysentery, which caused his death there. Before his death, news arrived of his elevation to the distinction of K.C.B. Other honors were in store for him, but they came too late. He was made maj.gen.; appointed to the colonelcy of the 3d Foot; and received a baronetcy, with a proposed pension of £1,000 a year. The rank and the pension were given to his widow, daughter of Dr. Marshman, eminent Bapt. minister. A new patent of baronetcy was issued in favor of the eldest son, H. having died the day before the patent was sealed. A metropolitan statue, raised by public subscription, has been erected to his memory in Trafalgar Square. H. was a strictly religious man and a severe disciplinarian, somewhat after the type of the grave and gallant Puritans who fought and conquered under Cromwell. 'For more than forty years,' he said to Sir James Outram in his last moments, 'I have so ruled my life, that when death came, I might face it without fear.' His death, at the moment when the rebellion had been crushed, excited the deepest sympathy and regret in the army of India, and among the public at home.

HAVEN, n. *hā'ven* [Dut. *haven*; Icel. *hofn*; OF. *havene*; F. *havre*, a haven]: a harbor; a port; a place of safety; a shelter: see HARBOR. *Note.*—HAVEN, in the same sense, assumes the various forms of *hope*—as in *St. Margaret's Hope* in Orkney—*hoff*, *howff*, and *haaf*.

HAVEN, *hā'ven*, ERASTUS OTIS, D.D., LL.D.: 1820, Nov. 1—1881, Aug. 3; b. Boston; bishop of the Meth. Episc. Church. He graduated at Wesleyan Univ. 1842, conducted a private acad. at Sudbury, Mass., was principal of the Amenia Seminary, N. Y., 1846-48, entered the Meth. Episc. ministry 1848, became prof. of Latin in the Univ. of Mich. 1853, and of English language, literature, and history 1854; was editor of *Zion's Herald* 1856-63, member of the Mass. board of education 1858-63, pres. of the Univ. of Mich. 1863-69 and of the Northwestern Univ. Ill., 1869-72, chancellor of Syracuse Univ. 1874-80, and was elected bp. 1880, May 12. He published, *The Young Man Advised* (1856), *Pillars of Truth* (1866), and *Rhetoric* (1866), and received the degree D.D. from Union College 1854, and LL.D. from Ohio Wesleyan University.

HAVEN—HAVERFORD COLLEGE.

HA'VEN, GILBERT, D.D.: 1821, Sep. 19—1880, Jan. 30; b. Malden, Mass.: bishop of the Meth. Episc. Church. He graduated at Wesleyan Univ, 1846, became teacher in Amenia Seminary, N. Y., and succeeded the Rev. Erastus O. H. as principal 1848, entered the Meth. Episc. ministry 1851, received the first commission as chaplain in the army at the beginning of the civil war, travelled extensively in Europe 1862, was assigned to special duty in Miss. 1865, was assigned to special duty in Miss. 1865, became editor of *Zion's Herald* 1867, and was elected bp. 1872. In the discharge of duty he visited nearly every state in the Union as well as Liberia and Mexico, and had a large share in the educational work of his church among the freedmen. He was a frequent contributor to periodical literature, and published *The Pilgrim's Wallet*, *National Sermons*, *Life of Father Taylor, the Sailor Preacher* (1871), and *Our Next-Door Neighbor, or a Winter in Mexico* (1875).

HA'VEN, JOSEPH, D.D., LL.D.: 1816, Jan. 4—1874, May 23; b. Dennis, Mass.: Congl. minister. He graduated at Amherst College 1835, and at Andover Theol. Seminary 1839; was pastor of the Congl. Church in Ashland, Mass., 1840-46, and Harvard Church, Brookline, 1846-50; prof. of mental and moral philosophy in Amherst College 1850-58 and of systematic theol. in the Chicago Theol. Seminary 1858-70; resigned, travelled in Europe and the East; and preached and lectured on ancient and modern philosophy and English classics till 1873, when he became acting prof. of mental and moral philosophy in the Chicago Univ., where he continued till death. His publications include *Mental Philosophy* (1857), *Moral Philosophy* (1859), *Studies in Philosophy and Theology* (1869), and *Systematic Divinity* (posthumous pub. 1875). He received the degree D.D. from Marietta College 1859 and Amherst College 1862, and LL.D. from Kenyon College 1862.

HAVER, v. *hā'vēr* [Gael. *abair*, to speak]: in *Scot.*, to talk foolishly or irrelevantly. HAVERING, imp. HAVERED, pp. *hā'vèrd*. HAVERIL, n. *hā'vēr-il*, one who talks foolishly about a matter.

HAVER, n. *hāv'ēr* [*have*, possess]: in *OE.*, one who holds or has; a possessor. HAVERS and EXHIBITS, the possessors of documents and the producers of them. HAVERS, n. plu. *hāv'ērz*, in *Scots law*, those who have the possession or custody of documents necessary to be produced in the conduct of litigation; a holder. EXHIBITS, n. plu. *ēgz-hīb'itz* [L. *exhibitus*, shown or displayed]: the writs and documents produced by a *haver*.

HAVER, n. *hāv'ēr* [Icel. *hafn*, oats]: in *OE.*, oats. HAVER-CAKES, oatmeal-cakes: see HAVERSACK.

HAVERFORD COLLEGE: in Haverford, Del. co., Penn., 8 m. n.w. of Philadelphia; founded by Philadelphia, New York, and New England members of the Soc. of Friends 1832; originally designed as a school for the advanced and collegiate education of young men belonging to the soc., opened to others than Friends 1849, and created a college with authority to grant degrees 1856. It

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was the first institution of a collegiate character established and conducted entirely by the Soc. of Friends; is richly endowed; has two halls, two astronomical observatories, scientific laboratories, mineralogical and geological cabinets, gymnasium, large and choice library, and a handsome alumni hall; and occupies about 250 acres with its buildings, superb lawn, and farm. It has had 7 executives: Samuel Hilles, John Gummere, Daniel B. Smith, and Joseph Harlan, principals; Samuel J. Gummere, Thomas Chase, and Isaac Sharpless, presidents: accommodates a limited number of resident students; has 20 professors and about 120 students; and has always maintained a high standard.

HAVERFORDWEST, *häv'ér-férð-wěst* (Welsh, *Hwlfordd*): parliamentary and municipal borough, seaport, and market-town of Wales, cap. of the county of Pembroke, and a county of itself, in a highly picturesque situation on the sides and at the foot of several steep hills on the West Cleddau river, 8 m. n.e. of Milford, about 270 m. w.n.w. of London. It is well built, but irregular, and is surrounded by several picturesque walks. When the Flemings settled in the district in the reign of Kenry I., H. was one of their principal stations. The castle, the keep of which is now used as the county jail, was erected in the 14th c., by Gilbert de Clare, first Earl of Pembroke. The nave of St. Mary's Church—one of the finest in S. Wales—is remarkable for beauty of roof-carving, and for skilful construction and rich ornamentation. Trade in the town is inconsiderable. Pop. (1881) 6,393; (1891) 10,254.

HAVERGAL, *häv'ér-gal*, FRANCES RIDLEY: 1836, Dec. 14—1879, June 3; b. Astley, Worcestershire, England: author. She began writing hymns and religious verse when 7 years old, was educated in the Louisenschule at Düsseldorf, returned to England and began studying German, French, and Greek and taking an active part in Sunday-school and other religious work 1854, and first published her poems in *Good Words* 1860. Her last 10 years were passed in writing religious books and hymns, and in temperance, hospital, and missionary work.

HAVERHILL, *häv'vér-ül*: city in Essex co., Mass.; on the Merrimack river at the head of tidewater and navigation; on the Boston and Maine railroad; 18 m. from the sea, 33 m. n. of Boston. It extends 12 m. along the river with an average width of 3 m., contains several picturesque hills, 4 lakes, and Ayer's and Rocks villages, is connected by bridges over the Merrimack with the towns of Bradford and Groveland, and since its great fire (1882, Feb. 18) has been substantially and tastefully rebuilt. The chief industry is the manufacture of boots and shoes, in which line H. ranks the 3d city in the country, employs 6,000 operatives; produces annually goods worth \$15,200,000. There are also large hat factories and woolen mills. Public buildings include city hall, Masonic Temple, Odd Fellows' Hall, pub. lib. projected by Hon. E. J. M. Hale, 1874, and now owning 70,000 vols., high school build-

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ing, Old Ladies' Home, and soldiers' monument in marble. H. has 23 churches, 6 nat. banks (cap. \$900,000), 2 savings banks, 4 daily and weekly newspapers, street railroad, gas and electric lighting, an efficient fire department, and a plentiful supply of water obtained from two of the lakes within its limits.—H., the Pentucket of the Indians, was settled 1640, incorporated as a town 1645, was the scene of Hannah Dustin's marvellous escape from Indians 1697, was several times attacked by Indians, furnished nearly 100 men for the battle at Bunker Hill, was the birthplace of John Greenleaf Whittier 1807, Dec. 17, built the first steamboat that navigated the Merrimack river 1828, and was chartered as a city 1869. In 1897 Bradford town was annexed to H. Pop. (1900) 37,175.

HAVERS, n. plu. *hāv'vērz*: in *OE.*, manners; behavior: see **HAVIOR**.

HAVERS, *hāv'ērz*, **CLOPTON**, M.D.: anatomist and physician, who, after studying at Cambridge and Utrecht, where he graduated, settled in London 1687. The dates of his birth and death are not known. His *Osteologia Nova, or Some New Observations of the Bones and the Parts belonging to them* (8vo. Lond. 1691), was long a standard work, and his name is indelibly recorded in the annals of anatomy as the discoverer of the Haversian canals in bone (see **BONE**). He edited *The Anatomy of Man and Woman, from Spacher and Rummelin* (folio, Lond. 1691) and was a contributor to the *Philosophical Transactions*.

HAVERSACK, n. *hāv'ēr-sāk* [*F.* *havre-sac*; *Ger.* *habersack*, an oat-bag, a knapsack—from *Ger.* *haber* or *hafer*, oats, and *sack*, a bag; *Scot.* *haver-sack*—from *haver*, oats, and *sack*]: bag usually of strong canvas, in which, on a march or in service each soldier carries his own provisions: it is borne on the left side by a strap passing over the right shoulder, and is used only in the field and in cantonments: in *Scot.*, a bag hung at a horse's mouth containing his oats.

HAVERSIAN-CANALS, *hāv'ēr'si-ān-* [after *Havers*, their discoverer]: very complicated apparatus of minute canals discovered in the substance of bone, by Clopton Havers, M.D.: see **BONE**.

HAVERSTRAW, *hāv'ēr-straw*: town in N. Y. on the w. bank of the Hudson river, 37 miles n. of New York. Stony Point, famous in the history of the American Revolution, is in this township. Steamboats and sloops carry on active trade with New York, and there are several foundries and manufactures. The manufacture of brick is very extensive. Pop. of tp. (1880) 6,973; (1900) 5,935.

HAVILDAR, n. *hāv'īl-dār*: a sergeant, highest non-commissioned officer among native troops in India. **HAVILDAR-MAJOR**, native sergeant-major in the Indian army.

HAVIOR, n. *hāv'yēr* [*OF.* *avoir*, possessions, ability; *Sw.* *hafwa*, to have, to possess]: in *OE.*, the primary word of which *behavior* is the derivative; behavior; conduct; manners.

HAVOC, or **HAVOCK**, n. *hāv'ök* [*W.* *hafog*, destruction,

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waste; *hai hafog*, a cry to cows when committing waste in a field; AS. *hafoc*, a hawk]: wide and general destruction; devastation; in *OE*, the cry of the soldiers when no quarter was given.

HAVRE, *háv'èr*, F. *áv'r*, LE (contraction of the original name, LE HAVRE DE NOTRE DAME DE GRACE): town second in size in the dept. of Seine-Inférieure, and, next to Marseilles, the chief commercial emporium of France; on the n. side of the estuary of the Seine, lat. $49^{\circ} 29' 16''$ n., long. $0^{\circ} 6' 37''$ e.; 108 m. n.w. of Paris, in a straight line. H. has direct communication with Great Britain, Holland, Hamburg, Portugal, Mexico, Brazil, United States, India, etc. It is the port of Paris, with which it is connected by a railway 143 m. long, and the continuation of this line to Strasburg affords such facility of communication with Germany, that the greater part of the trade of that country with America is carried on through H. For foreign trade, H. is the Liverpool of France; it receives annually from 500,000 to 600,000 bales of cotton, nearly three fourths of the whole quantity imported; it also ships most of the exports to America, and, generally speaking, has about one-fifth of the whole trade of the country. The trade with the United States is very large. The sum-total of its imports and exports (1901) 1,730,600,000 fr. (\$346,000,000) customs receipts (1888) \$10,267,111. The imports consist of cotton, spices, coffee, tea, sugar, timber, coal, etc.; exports, French manufactured goods, wine, brandy, oil, jewelry, provisions, etc. In 1888, 6,173 vessels, of 2,873,934 tons, entered the port. About 600 vessels belong to H. It is now fortified as a fleet station and harbor of war. It has manufactures of paper, sulphuric acid, tobacco, cotton goods, starch, lace, oil, machinery, ropes, salt, etc., also sugar refineries; the annual value of the manufactures being estimated at \$12,125,000. Its harbor is one of the most accessible in France, and is entered by a narrow channel formed by two long jetties stretching from e. to w., and which, owing to the current, requires little dredging. This channel leads to the *avant-port* (outer harbor), where the various passenger-steamers lie, and within this *avant-port* are capacious wet docks, capable of accommodating 500 ships. The largest of these is L'Eure, 700,000 sq. ft. Among the dry docks, one recently completed, 515 ft. long and 112 broad, is a stupendous work, and obviates the necessity for sending large steamers for repairs to Southampton. A new basin has been constructed in the plain of the Leure, covering about 53 acres. H. was, till 1884, surrounded by ramparts and lofty walls; but these were demolished, to admit of the extension of the town, which has now absorbed the neighboring communes of Ingouville and Graville l'Heure. Among public buildings are the churches of Notre Dame and St. Francis, the new city hall (in the style of the Tuileries), the tower of Francis I., exchange, mansion-house, arsenal, barracks, and a number of elegant villas which clothe the slopes of Ingouville. The principal institutions are a School of Navigation, a School of Applied Geometry and a library containing 20,000 volumes. The greater part

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of the town is modern. H. was founded 1509 by Louis XII. on the site of a fishing village, and was intended as a harbor of refuge for the French navy. It was greatly extended and improved by his successor, Francis I., and from his time rapidly rose in importance, especially as the rival harbor of Harfleur was being gradually silted up with sand. The names of Richelieu, Colbert, Vauban, Napoleon, etc., are connected with the improvements and additions made to the original harbor. It was bombarded by the British 1694, 1759, 94, and 95. Under Louis XIV., it became the entrepôt and chief seat of operations of the French, E. India and the Senegal and Guinea Companies. It was the birthplace of Mademoiselle Scudery, Bernardin St. Pierre (author of *Paul and Virginia*), and Casimir Delavigne. The statutes of the last two are in front of the library facing the harbor. Pop. (1886) 114,949; (1901) 130,196.

HAVRE DE GRACE, *häv'ér dé gräs*: city in Harford co., Md.: on the Susquehanna river near Chesapeake Bay: on the Philadelphia Wilmington and Baltimore railroad: 36 m. n.e. of Baltimore. It has a large trade in coal; is the outlet to tidewater for the lumber, minerals, manufactures and agricultural products of the valleys of the Susquehanna; has several ship-yards, breweries, flour, saw, and planing-mills, shad and alewife fisheries, and noted canvas-back duck waters, and one national bank (cap. \$60,000.) Pop. (1880) 2,816; (1900) 3,423.

HAW, n. *haw* [A.S. and mid. L. *haga*; F. *haie*; Ger. *hag*; Dut. *haag*, a hedge, an inclosure: Icel. *hagi*, a hedged field]: the berry of the hawthorn; a gristly excrescence under the nether eyelid of a horse; the white of the eye in a horse. **HAWTHORN**, n. *haw'thawn* [*haw* and *thorn*: Gael. *uath*, the white thorn]: a common prickly tree or shrub, used in Britain for hedgerows; the *Crataegus oxyacantha*, ord. *Rosacée*: see **HAWTHORN** (below). **HAWHAW**: see under **HA**.

HAW, v. *haw* [an imitative word]: to make sounds like *haw, haw*, between one's words in speaking. **HAW'ING**, imp.: N. hesitation. **HAWED**, pp. *hawed*. **HEMS AND HAWS**: see under **HUM**.

HAWAII: a territory of the U. S., formerly called **SANDWICH ISLANDS**: archipelago in the Pacific Ocean between n. lat. 19° and 22°, and w. long. 155° and 160°. The group of islands was discovered by Capt. Cook 1778, and was named by him Sandwich Islands in honor of Lord Sandwich, at the time first lord of the admiralty in the Brit. govt. But that name has gone out of use and the group is now known as the Hawaiian Islands or simply Hawaii, properly the name of the largest and easternmost island of the archipelago. As a state or government the official style is territory of Hawaii. There are 12 islands with a total area of 6,667 sq. m. Advancing westward from the e. extremity of the group, the first island is Hawaii, area 4,200 sq. m.; then follow Maui, 800 sq. m.: Kahulawe, 65; Lanai, 100; Molokai (on which is a colony of

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lepers) 200; Oahu (in which is Honolulu, cap. of the republic), 500; Kauai, 640; Niihau, 95. Besides these 8, there are 4 other islands, but they are naked rocks and uninhabited—Molokini, Lehua, Kaula, and Nihoa. The cap., Honolulu, is distant 2,100 m. from San Francisco, 3,440 from Yokohama in Japan, 3,810 from Auckland in New Zealand, and 4,484 from Sydney in New South Wales.

Surface Features and Volcanic Phenomena.—The islands are of volcanic origin and all are mountainous. They rise in many cases precipitously out of the sea, presenting a front of vertical cliffs from 1,000 to 3,000 feet high. The surface of the island Hawaii is diversified by 4 great mountain masses, viz., Mauna Kea (highest peak, 13,805 ft.) in the n.—this is the highest mountain in any island of the Pacific; Mauna Loa (greatest elevation 13,675 ft.) in the s., an active volcano; Mauna Hualalai (8,275 ft.) in the w.; and Mauna Kohala (5,500 ft.) in the n.w. Mauna Kea in its principal elevations presents a number of truncated cones out of which rise numerous inactive craters. Its sides rise at a gentle gradient so that the platforms out of which the crater cones project may be visited on horseback. The crater of the active volcano of Mauna Loa is 8,000 ft. in diameter, and on the inner side the walls, which are nearly perpendicular, rise to the height of 500 ft. From the floor of the crater, usually covered with indurated lava, rise numerous cones: when the volcano is quiescent sulphurous acid gas and steam are emitted through fissures. The first recorded eruption of Mauna Loa occurred in the year 1832, and a more violent eruption occurred 1843: there were threestreams of lava, 5 m. wide in places, and more than 20 m. long. Mauna Loa was again destructively active in the years 1851, '52, '55, '59, '68, '77, '80–81 (duration, 9 mos.) and 1893. The eruption of 1859 continued for 2 mos.: the stream of lava was 50 m. long and 1 to 5 m. wide: it reached the sea in 8 days. The solidified lava left by that flood is in some places several hundred ft. thick. Less grand and imposing as a spectacle, the eruption of 1868 was not less terrible in its direct effects; the attendant earthquakes producing such commotion in the adjacent waters that a great wave of the sea, 40 ft. high, broke on the shore. In 1877 the stream of lava flowed for 6 hours. Kilauea, 16 m. s.e. of the principal elevation of Mauna Loa, has a crater 9 m. in circumference, and in that respect is pre-eminent among active volcanoes. There is authentic record of an eruption of Kilauea in 1789; between that year and 1823 there is no memory of any extraordinary activity of this volcano. The great crater of Kilauea rises out of a plain 4,400 ft. above the sea level: interiorly its walls rise vertically to the height of 1,000 ft.: at the bottom, when the volcano is moderately active, is a lake of liquid, boiling lava. In 1840 Kilauea sent forth a stream of lava through a crater 8 m. distant from the great caldron on its summit: this stream was half a mile wide, and reached the sea by a winding course of 40 m. Once for three years, 1856–59, Kilauea was in eruption incessantly. The crater of the extinct volcano Mauna Haleakala on the isle of Maui has a

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circumference of 20 m.: its walls inside are from 700 to 2,000 ft. high: the rim of the crater is 10,000 ft. above sea level.

Climate, Rivers, Soil, etc.—The islands, though within the tropics, enjoy a temperate climate with equable temperature. The n.e. trade-winds, which blow for 9 mos., bring frequent rains to the mountainous districts on the e. coasts, but on the leeward slopes rain seldom falls. During the 3 mos. Jan., Feb., and Mar. a strong s.w. wind prevails, and occasionally there is an unpleasant hot, damp wind from the equatorial region. At Honolulu, which is on the leeward side of Oahu, the mean annual rainfall is abt. 38 in.; lowest temperature 56° Fahr., highest 85° Fahr.—The soil in general is fertile, with considerable tracts of desert, where the volcanic rocks have not been transformed or disintegrated by weathering and the growth and decay of vegetation for long periods. There is abundance of good pasturage, and cattle-breeding and sheep husbandry are considerable industries. Dense forests clothe the mountain slopes on the windward side. Sugar-cane is extensively cultivated in the plains: Indian corn and wheat are staple products. Tropical and semi-tropical fruits meet with favorable conditions on the islands. On the larger islands the rivers are numerous, though of course small: systematic irrigation can be cheaply effected.

Commerce.—Till 1876 the traffic of the islands was mostly with the whaling vessels engaged in the whale-fishery of the Pacific; but in that year a reciprocity treaty was concluded with the United States, under which the export of sugar quickly grew to considerable proportions. The value of sugar plantations in the islands was, 1890, estimated at \$32,347,690: the owners were nearly all citizens of the United States or descendants of the missionaries and early American settlers. The labor was done principally by Japanese, 27,531 of 38,479 employed on the plantations in 1901 being of that nationality. There were (1894) 68,000 acres under sugar culture. The year's export of sugar was 259,000,000 lbs. valued at \$12,159,585; and for 1893, 330,822,879 lbs., value \$10,200,958. Coffee was an important article of export till 1880, but declined steadily till 1893-4, when renewed interest was taken in the culture and large tracts of land planted. Rice is the principal crop next to sugar, the exports in 1893 amounting to 7,821,004 lbs. The principal exports, besides sugar, are: rice, bananas, hides, and wool. The imports in 1901 amounted to \$24,679,368; exports \$28,021,382, about 90 per cent. of the trade being with the U. S. The public revenue of the year 1899 was \$3,345,231; expenditure, \$2,553,727; public debt, \$4,890,351.

Population.—The population, supposedly of Malay origin, was by Capt. Cook, 1778, estimated at 400,000: necessarily a mere guess and in all probability far in excess of the true number. Christian missionaries from the United States founded stations in the islands 1820; they made an informal census of the people 1823 and estimated their number at 140,000: twenty years previously a terrible pestilence had wrought great ravage among the islanders.

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Each successive census has shown a marked decline in the population, which, 1832, was found to number 130,313; 1884, 80,578; and of this number only about one-half were natives, the rest being whites, Japanese, Chinese, and men of various other races. mostly laborers imported under contract to work on the sugar plantations. Total population, 1900, was 154,001; of these 29,834 were natives, 7,835 half-breeds, 7,495 were native Hawaiians of European race, 25,742 Chinese, 58,500 Japanese, 8,602 Portuguese, 1,928 Americans, 1,344 British, 1,034 Germans. The pop. of the cap., Honolulu, 1900, was 39,305.

History.—One of the islands of the Hawaiian archipelago was sighted by Gaetano, a Spanish navigator, 1542; and later two or three other Spanish navigators brought to Europe tidings of this interesting chain of isles. But till the group was re-discovered by Capt. Cook 1778, the islands were in effect unknown to Europeans. In that year Cook anchored off Waimea in the isle of Kauai Jan. 19. and visited that and some of the other islands. He was treated with boundless hospitality by the natives on the island of Hawaii, but lost his life in a quarrel with his hosts 1779, Feb. 14. Kamehameha, king or supreme chief of some of the tribes of Hawaii, acquired dominion first over the whole of that island, then over the rest of the islands of the group, and founded a dynasty. He formally placed his kingdom under the protection of the British crown 1810. Kamehameha's line became extinct 1873. American missionaries arrived in Hawaii 1820 and ere long the whole population was Christian, by profession at least, if not in their lives. The despotic form of government established by Kamehameha I. was transformed 1840 in the reign of Kamehameha III., who granted to his subjects a constitution. To Kamehameha V. succeeded, 1873, Lunalilo, a high chief, but not of the royal lineage; and Lunalilo, dying without an heir, was succeeded by Kalakaua 1874, who reigned till 1891. His sister, Liliuokalani, widow of John O. Dominis, succeeded him. Under Kalakaua and Queen Liliuokalani revolution by force of arms frequently seemed inevitable, because of the conflicting interests of the dominant class (men of property, of European or American birth or origin) on one side, and of the native population on the other. The outbreak was prevented again and again by timely concessions on the part of the sovereign, and on one occasion, 1892, Apr., by the threat of armed intervention of a U. S. naval officer, Acting Rear-Admiral Brown. But the tide of discontent with the rule of the queen and her advisers was steadily rising; and 1893, Jan. 17, the party of revolution by a show of force overawed the guards and custodians of the royal palace and chief government offices in Honolulu, seized the person of the queen, declared the monarchy at an end, set up a provisional republican govt., with Sanford B. Dole at its head as president, and sued for annexation to the United States. A force of marines detailed from the U. S. steamship *Boston* in the harbor, at the instance of the U. S. minister resident, John L. Stevens, kept order and

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gave moral aid to the revolutionary party from the first, and remained on shore protecting the provisional govt. till ordered back to their ship by U. S. Commissioner Blount after the accession of Grover Cleveland to the presidency. Congress refused to approve the annexation of Hawaii to the United States, and the 'Republic of Hawaii' was proclaimed as an independent free state 1894, July 4. The constitution, adopted by a convention of delegates who came together May 30, named Sanford B. Dole to be pres. of the republic from 1894, July 4, to 1900, Dec. 31. Provision is made in the constitution for a president, a cabinet of 4 ministers, an advisory council of 15 members, and a senate elected for 6 years (one-third every two years) and a house of representatives elected for 2 years, each of 15 members. Voters must be 20 years of age, able to read, write, and speak either English or Hawaiian fluently, and also, in order to vote for senators, must be possessed of \$4,000 or a yearly income of \$600. The president's term is 6 years, and he is ineligible for re-election. The advisory council is appointed, 5 members by the pres. and 5 by each of the 2 houses of congress; is chosen for two years, and under certain conditions possesses legislative powers and the right to appropriate public funds, and in conjunction with the cabinet constitutes a board of pardons. The legislature meets biennially. The provisions for naturalization tend to exclude Asiatics from citizenship. The pres. is elected by the congress, the two houses meeting in joint session; but a majority of the senate is required as well as a majority of the joint assembly. In case of a vacancy in the presidential office, a member of the cabinet serves as pres. *ad interim* until a new pres. is elected by the congress. If one of the two houses of the congress adjourns without consent of the other, that other possesses full legislative power. The pres. and senate have authority to conclude a treaty of commercial and political union with the United States. U. S. Minister Willis and most of the diplomatic representatives of foreign govts. at Honolulu recognized the new Republic of Hawaii. In the cabinet of Pres. Dole, F. M. Hatch has had the portfolio of foreign affairs, J. A. King of the interior, S. M. Damon of finance, and W. O. Smith was atty.gen. There were frequent rumors of reactionary plots for the overthrow of the republic and the restoration of the monarchy. And after three or four such attempts had been discovered and frustrated by the vigilance of the police, a forcible attempt was made to overthrow the government 1895, Jan. 6. The insurrection was planned by the ex-queen's personal friends, —Wilcox, Nowlein, Bertelmann, Gulick, and Seward,—but was quickly suppressed, and the six leaders of the revolt were found guilty of treason and sentenced to death; but Pres. Dole commuted this penalty to fines and imprisonment. Liliuokalani was also found guilty: she was sentenced to be restrained of her liberty for 5 years. A number of the conspirators were pardoned Thanksgiving-day, 1895, and all the remainder on New-year's day, 1896. The ex-queen received a conditional pardon, 1896, Feb. 7, and

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was eventually set completely at liberty. On the accession of Pres. McKinley, 1897, Mar. 4, the project of annexation was revived. June 16, a treaty of annexation was signed at Washington by U. S. Sec. of State Sherman and by special commissioners representing the republic of Hawaii, and was sent the same day to the senate for ratification. The chief stipulations of this treaty are as follows: the republic of Hawaii to cede absolutely to the United States all rights of sovereignty in and over the Hawaiian Islands and their dependencies, and such territory to be annexed to the United States under the name of the Territory of Hawaii, subject to the general laws governing territories of the United States, except that the public lands of Hawaii are to be made the subject of special legislation, and all revenue derived from them, beyond what is used directly for governmental expenses, to be expended 'solely for the benefit of the inhabitants of the Hawaiian Islands for educational and other public purposes;' the United States to assume the public debt of Hawaii to an amount not exceeding \$4,000,000; all treaties between the republic of Hawaii and foreign nations to cease and determine, and to be replaced by treaties of the United States now existing or hereafter to be concluded; immigration of Chinese to Hawaii, and from the Hawaiian Islands to the present territory of the United States, to be absolutely prohibited.

The treaty gave rise to heated discussion in the senate and throughout the country. The desirability of protecting the extensive American interests already in the islands, and the industrial and commercial advantages of their acquisition, were generally conceded; the chief objections were the difficulty of governing their mixed population on republican principles, the great increase of navy required for their defense, and the entering on a policy of colonization and foreign complications, contrary to the traditions of the United States. Japan sent a formal protest against annexation. The senate, at its adjournment, 1897, July 24, had not ratified the treaty.

A joint resolution providing for the annexation of the islands by accepting the offered cession and incorporating the ceded territory into the Union was adopted by congress and approved 1898, July 7. Thereupon the President entrusted Rear-Admiral Miller with the duty of delivering the legislative act to President Dole of the Hawaiian republic, with whom he was authorized to make arrangements for the transfer of the islands. The formal transfer of the sovereignty took place 1898, Aug. 12, and a commission was appointed to report and recommend to congress such legislation as it deemed necessary for the islands. On Dec. 6 the report of this commission, and the bills it had drafted, were submitted to congress by the President. On 1900, June 14, the islands were organized as a territory of the U. S., in accordance with an act of congress, which admitted to U. S. citizenship all persons who at date of annexation were citizens of Hawaii. Sanford B. Dole, president of the former republic, was made governor of the territory.

HAWASH—HAWICK.

HAWASH, *hă-wâsh*: river of Abyssinia, boundary bet. Shoa and the country of the Gallas tribes. It flows into Lake Aussa. The name Abyssinia (called Habesh by the Arabs) probably originated in that of the river.

HAWEIS, *hoyss*, **HUGH REGINALD**: clergyman and author: b. Egham, Surrey, England, 1838, April 3. He graduated at Trinity College, Cambridge, 1859; and was appointed curate of St. Peter's, Bethnal Green, of St. James the Less, Westminster, 1863, and incumbent of St. James', Marylebone, 1866. He served with distinction in the Italian revolution with Garibaldi, and is a popular preacher and liberal in his views. He has been a very frequent contributor to the *Quarterly Review*, *Contemporary Review*, and *Good Words*; has been editorially connected with *Cassell's Magazine* and *The Echo*; and has otherwise published *Music and Morals*, *Thoughts for the Times*, *Speech in Season*, *Current Coin*, *Arrows in the Air*, *Ashes to Ashes* (favoring cremation), *American Humorists* (1883), *Unsectarian Family Prayers*, and *Christ and Christianity*, 5 vols. (incomplete 1889).—His wife, daughter of T. M. Joy, artist, is herself an excellent artist, and well known as author of *Chaucer for Children*, and *The Art of Beauty*.

HAWFINCH (*Coccothraustes vulgaris*): bird of the Grosbeak (q. v.) genus, and the finch family (*Fringillidae*). It is considerably larger than the chaffinch; the adult male has the crown and back chestnut brown, neck, and rump gray, wings partly black, larger wing-coverts white. The H. is very shy, avoiding man, and therefore often unobserved in districts where it is not rare. It is gregarious. It lives chiefly in forests, builds its nest on the highest branches of trees, and feeds much on the kernels of the haw (whence its name), on beechmast and the kernels of the plum, cherry, etc. It is widely diffused over Europe, in n. Africa, and temperate parts of Asia.

HAWICK, *haw'ik* or *haw'wîk*: burgh of barony, and manufacturing town in s. Scotland, county of Roxburgh, at the confluence of the Teviot and the Slitrig, 10 m. s.w. of Jedburgh, 53 m. s.e. of Edinburgh by railway. Some of the churches and bank-offices are elegant modern buildings; many elegant mansions and fine villas have sprung up within recent years. The town contains relics of antiquity: among these are the Tower Inn, part of which was an ancient fortress, and the residence of the barons of the Drumlanrig, the superiors of the town; and the Moat, a circular mound, supposed to have been used in remote times both as the place of assembly and deliberation of the neighboring chiefs, and as the seat of justice. H. carries on the manufacture of Tweeds (q. v.) on a great scale, and has long been known as a principal seat of the hosiery manufacture in Scotland. The Tweed-trade has greatly increased in importance of late years, and, beside the manufacturers, resident wholesale merchants are largely engaged in it. The stocking manufacture was commenced 1780. Plaids, shawls, blankets, and leather are manufactured in the town. About 300 power and 100 hand-loom are employed. The

HAWIZA—HAWK.

exchange is a large and handsome building erected 1865. H. now forms one of the three border burghs, which together return a member to parliament. Pop. (1871) 11,355; (1881) 16,184; (1891) 19,204.

HAWIZA, *hâ-wē'zâ*: large and important Arab town of Persia, province of Khuzistan, lat. 31° 15' n. and long. 48° e.; 80 m. s.w. of the city of Shuster. Previous to 1835, the river Kerkhah flowed through the town from e. to w.; but a canal having been made to irrigate a tract of country on the n. side of the river, and whose level was lower than that of the vicinity, the waters of the river burst through the new opening, and are now lost in a marsh, 15 m. n. of H. The inhabitants of the town can now obtain water only by digging wells in the old bed of the river. Pop. estimated 12,000.

HAWK, v. *hawk* [W. *hochi*, to clear the throat; *hoch*, the throwing up of phlegm: Magyar, *hak*, clearing the throat, phlegm: Dan. *harke*, to hawk: an imitative word]: to bring up phlegm by coughing. **HAWK'ING**, imp.: N. the effort to force up phlegm from the throat; a small cough. **HAWKED**, pp. *hawkt*.

HAWK, v. *harok* [Norw. *hauka*, to cry, to shout: Pol. *huk*, roar, din: W. *hwa*, to halloo: Dan. *hökke*, to hawk: Ger. *höken*, to higggle, to huxter]: to carry about goods for sale from place to place; to peddle. **HAWK'ING**, imp.: N. the act of offering goods for sale on the streets. **HAWKED**, pp. *hawkt*: see **HAWKER**.

HAWK, n. *hawk*: a small flat board, having a handle underneath, used by plasterers when at work with mortar or plaster; probably connected with **HAWK** 5.

HAWK, n. *håwk* [AS. *hafoc*: Icel. *haukr*, a hawk: Fin. *hawikka* a hawk—from *hawia*, voracious]; a bird of prey of several species: term often applied to almost all the *Falconidæ*, except the largest eagles, but used also in a restricted sense to designate a section of the family, reckoned among the *ignoble* birds of prey, having the wings so short as not to extend to the extremity of the tail, and the bill short and curving from the base. In many of their characters and habits, however, they make a very near approach to the true falcons. The species are numerous, are arranged in several genera, and are distributed over the



Lure.



Bell.

world. Examples of two of the most important genera are the Goshawk (q.v.) and Sparrowhawk (q.v.), see also **FALCONIDÆ**. In *heraldry*, the hawk frequently occurs as a charge, and may be *belled*, *jessed*, and *varvelled*. The *hawk's bell*, itself used as a separate charge is attached to the leg of the bird by *jesses* or thongs of leather. *Varvels* are rings attached to the end of the jesses. The *hawk's lure*, also a heraldic charge, consists of two wings joined with a line, to the end of which is attached a ring. The line is sometimes

HAWK—HAWKE'S BAY.

nowed or knotted. HAWK, v. to fly trained hawks at birds on the wing. HAW'KING, imp.: N. the sport of taking wild birds by means of a hawk. HAWKED, pp. *hawkt*: ADJ. crooked or curved, like a hawk's bill. HAWK-EYED, quick-sighted. HAWK-NOSED, *-nōsd*, having a nose crooked like the beak of a hawk.

HAWK, or HAWK, n. *hawk* [Icel. *hack*, a hook]: an instrument with bent prongs for dragging manure from the cart in the process of manuring a field: V. to drag manure from a cart in manuring a field: see HAWK 4.

HAWKE, *hawk*, EDWARD, Baron: 1705—1781, Oct. 17; b. England: admiral. He entered the navy when a boy, became commander of the *Wolf* 1733, took part in the naval battle off Toulon 1744, and distinguished himself by running his ship out of the line of battle and capturing a Spanish vessel of superior force. For this breach of discipline he was tried and dismissed from the service; but George II. almost immediately restored him. In 1747, he was promoted rear-admiral, gained a signal victory over a French fleet convoying W. Indian merchantmen off Belleisle, and was created knight companion of the Bath. He was elected to parliament 1747, was promoted vice-admiral of the blue 1748, and admiral of the white 1755, succeeded Admiral Byng in command of the Mediterranean fleet 1756, drove a French fleet intended for America on shore on the Basque Roads 1758, and prevented a projected French invasion of England by defeating a large fleet in Quiberon Bay during a furious storm 1759. For this victory he received the thanks of the Commons and a pension of £2,000 per annum. He was appointed vice-admiral of Great Britain and first lord of the admiralty 1765, and raised to the peerage 1776.

HAWKER, n. *hawk'er* [O.Dut. *heukeren*, to sell by retail: Dan. *hökr*, a huckster]: pedler, or petty chapman, or vender; a travelling seller of goods; a crier and retailer of goods or one who exercises his handicraft about the streets. *Note*.—This word may only be a corruption of HUCKSTER, properly the feminine form, which see. Skeat says HAWKER is a much older word than the verb HAWK 2. Laws relative to this occupation vary in different localities; but generally, a hawker is required to have a license, which he can obtain on payment of a certain sum; and the business is held under somewhat strict police regulation. This is not only because of liabilities to fraud, but also for the protection of regular shopkeepers from being undersold by a class of venders who pay no rent.

HAWKER, n. *hawk'er* [Dut. *hoeker*]: vessel built like a pink, but rigged like a hoy; that is, having a narrow stern and sloop-rigged.

HAWKE'S BAY, or HAWKE BAY: provincial district of New Zealand, named the bay on the e. coast of the North Island. The dist. is between Auckland and Wellington, has an area of 3,050,000 acres (of which 570,000 are held by natives with European titles); and consists of rich alluvial

HAWKESBURY--HAWK-MOTH.

plains and undulating hills, rising gradually from the coast. It is almost all suitable for farming, and the coast is well adapted for vines. The forests are of enormous extent. Napier (pop. 5,756) is the port and chief city. Pop. of H. B. (1881) 15,707; (1886) 24,568.

HAWKESBURY, *hawks'bēr-re*: river of New S. Wales, enters the Pacific at Broken Bay, about 20 m. n. of Sydney: length, 330 miles.

HAWKINS, *hawk'inz*, BENJAMIN: 1754, Aug. 15—1816, June 16; b. Warren co., N. C. He left Princeton College in his senior year and joined Washington's army; was on his staff over a year; 1780 made commercial agt. of N.C.; 1781-84 member of continental congress; 1785 was appointed on a commission to treat with Cherokee and other Indians, and afterwards to negotiate with Creek Indians; 1786-7 again in congress; 1789 was elected by legislature one of the first two senators from N. C., taking his seat 1790. Before the close of his term he was appointed by Washington agent for all Indian tribes south. In a short time he gained the confidence of the Indians and complete control over the four principal Indian nations of the United States. He was 36 years in the public service.

HAWKINS, Sir JOHN: abt. 1532-1595, Nov. 12; b. Plymouth: English navigator. He has the infamous distinction of being the first Englishman that trafficked in slaves. His 'commercial' career ended 1568, after which he was more honorably employed. He was appointed treasurer of the navy 1573, knighted for his services against the Spanish Armada 1588, and for the rest of his life was engaged in making havoc of the Spanish W. Indian trade. In 1595, with his kinsman, Drake, he commanded an expedition against the Spanish settlements in that part of the world, but died in the same year. H. founded a hospital at Chatham for relief of disabled and sick sailors.

HAWK-MOTH: name sometimes used to comprise all the lepidopterous insects of the section *Crepuscularia*, the Linnæan genus *Sphinx*. They have a spine or stiff bristle, on the anterior edge of each of the hind-wings, and these being received in corresponding hooks on the under-side of the fore-wings, attach them together. Their wings are generally covered with a looser down than those of butterflies. The body is rather large and thick. Notwithstanding the name *Crepuscularia*, signifying that their period of activity is that of twilight, and which is truly characteristic of the greater number, many of them may be seen darting from flower to flower even at mid-day, or hovering over flowers, from which they suck the honey by their long proboscis. They make a loud, humming noise with their wings, and are insects of very rapid and powerful flight. Their caterpillars have always 16 feet. A peculiar position which the caterpillars often assume has led to the name *Sphinx*, because of a fancied resemblance to the sculptured monster of Egypt. Their chrysalids are cylindrical, free from points and angular prominences, blunt-headed, with a conical abdomen and are sometimes inclosed in cocoons.

HAWKS—HAWKSHAW.

sometimes concealed in the earth.—The name H.-M. is sometimes limited to a division of the *Crepuscularia*, of which the genus *Sphinx*, as now restricted, is the type, and of which the Death's Head Moth (q.v.) is an example. Their caterpillars are smooth and elongated. The name H.-M. appears to be derived from the hovering motions of these insects, resembling those of hawks looking for prey.—Hawk-moths are most abundant in warm climates: some species have a wide geographical range.

HAWKS, *hawkz*, FRANCIS LISTER, D.D., LL. D.; 1798, June 10—1866, Sep. 27; b Newbern, N. C. He was educated at the Univ. of North Carolina; admitted to the bar 1817: in 1819, elected to the state legislature; but being drawn to the clerical profession, he was ordained, 1827, a clergyman of the Prot. Episc. Church; and was rector at New Haven, Philadelphia, and St. Thomas's Church in New York, until 1843. During this period he was appointed historiographer of the Prot. Episc. Church in America, and visited England in search of documents. In 1837, he founded, with Dr. Henry, the *New York Review*, and established St. Thomas's Hall, a high school, at Flushing, Long Island, which involved him in heavy pecuniary liabilities, charges based upon which were brought against him on his election 1843 as Bishop of Mississippi. He was acquitted of the charges, but declined the bishopric. In 1844, he became rector of Christ's Church, in New Orleans, and pres. of the University of Louisiana. In 1849, he declined the bishopric of Rhode Island, and became rector of Calvary Church, New York. In his busy career he published *Reports of the Supreme Court of North Carolina* (4 vols., 1823–28), *Contributions to the Ecclesiastical History of the United States* (2 vols., 1836–40), *Egypt and its Monuments* (1849), *Auricular Confession in the Protestant Episcopal Church* (1850), a translation of Rovero and Tschudi's *Antiquities of Peru* (1854), and edited the papers of General Alexander Hamilton, biographical works, several juvenile books, *Commodore Perry's Expedition to the China Seas and Japan* in 1852–54, and a portion of a *History of North Carolina*. He died in New York, leaving high repute for scholarship, intellectual ability, and pulpit power.

HAWKSBEETLE (or **HAUKSBEETLE**), *hawk's bē*, FRANCIS: English natural philosopher: born in the latter half of the 17th c.; died about 1730. He was admitted a fellow of the Royal Soc. in 1705, and was appointed curator of experiments to the soc., and in 1723. assistant secretary. He contributed 43 memoirs to the *Philosophical Transactions*, 1704–13, chiefly on chemistry and electricity. Of his experiments in electricity, Dr. Thomson, historian of the Royal Soc., observes, that 'they constitute the beginning of the science, and were doubtless of particular service in promoting electrical investigations.' He improved the earlier air-pumps of Boyle, Papin, and Hooke (see Wilson's *Religio Chemici*, pp. 215–218); and was the first who used glass in the electrical machine.

HAWKSHAW, Sir JOHN: engineer; b. Leeds, Eng.

HAWKWEED—HAWLEY.

land, 1811. He received a grammar-school education, was asst. to Alexander Nimmo, engineer in charge of the construction of public works in Ireland; and succeeded him in the management of the Bolivar copper-mines in S. America 1831. He returned to England 1834, and was engaged on numerous great engineering works in various parts of Europe till 1874, when he accepted a commission from the emperor of Brazil to examine and report on the principal harbors on that coast. He was pres. of the Institution of Civil Engineers 1862-3, was knighted 1873, and was pres. of the British Assoc. at the Bristol meeting 1875. His professional work includes the construction of railroads in England, Russia, India, and Mauritius, bridges and docks in Hull and London, foundation for the forts at Spithead, great ship canal from Amsterdam to the North Sea, and the improvement of the great sluice at St. Germaines after the disaster 1862. He d. 1891, June 2.

HAWK WEED (*Hieracium*): genus of plants of nat. ord. *Compositæ*, sub-ord. *Cichoraceæ*. The species are annual, or more generally perennial plants, some with leafless scapes, one-flowered or many-flowered, and some with leafy stems; the leaves, stems, and involucre in many species being hairy. They are very numerous, natives of the temperate and colder regions of the northern hemisphere, abounding particularly in Europe. The flowers are generally yellow, but the Orange H. (*H. aurantiacum*), native of s. Europe, is



Orange Hawkweed (*Hieracium aurantiacum*).

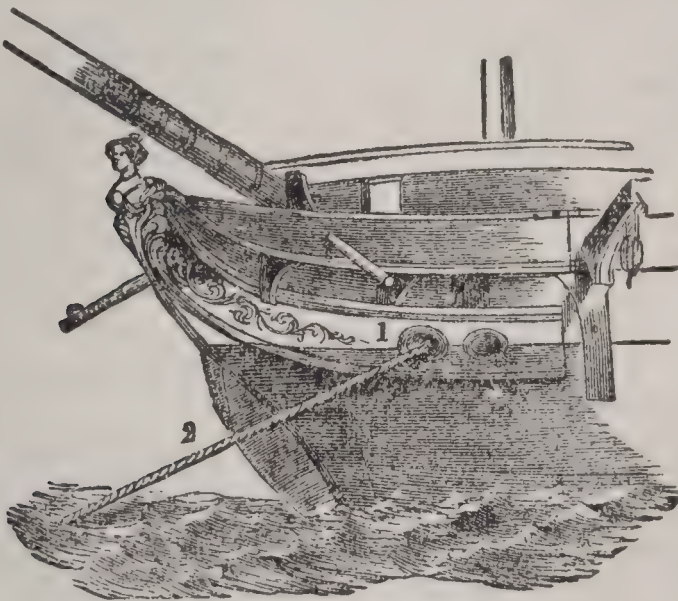
often cultivated in gardens for its rich orange flowers. It is a perennial, about two ft. high.

HAWLEY, JOSEPH ROSWELL, LL.D.: journalist. b. Stewartsville, N. C., 1826, Oct. 31; of parents from Conn., who returned thither when he was 11 years old. He gradu-

HAWSE.

ated at Hamilton College, 1847, studied law and began to practice in Hartford, 1850, aided in organizing the republican party in Conn., 1856, abandoned law for journalism, 1857, and was editor of the *Hartford Evening News*, an organ of the new party, till 1861, Apr. 15, when he was the first man in Conn. to enroll his name as a volunteer. He was appointed lieut. and afterward capt. in the 1st Conn. inf., was in the battle of Bull Run, and at the close of his 3 months' service, aided in recruiting the 7th Conn. inf., of which he was commissioned lieut.col. In 1862, he was promoted col., 1863, placed in command of a brigade, 1864, promoted brig.gen., 1865, brevetted maj.gen., and 1866, Jan., mustered out of the service. After serving a term as gov. of Conn., 1866-7, he became editor of the *Hartford Courant*, with which the *Press* had been consolidated, 1867; pres. of the national republican convention, 1868; member of congress, 1873-76, 1879-81; U. S. senator, 1881-1905. He was pres. of the U. S. Centennial Commission, 1872-77, and received the degree LL.D. from Hamilton College, 1875, and Yale Univ. 1886.

HAWSE, n. *hăwz*, also HALSE, n. *hăwz* [It. *alzare*; OF, *hausser*, to raise: Dut. and Icel. *hals*, the neck part of the bow of a ship, or of a sail—in Scot. *hawse* means the throat]: the situation of a ship's cables when she is moored with two anchors out forward, one on the starboard, one on the port bow—a *jowl hawse* being when the cables cross each other or are twisted together: also the part of the bows close to the cables: also any small distance ahead of a ship, or between her bow and the anchors at which she rides; e.g.,



1. Hawse Holes. 2. Hawser.

when it is said of another vessel 'she sailed athwart our hawse.' or 'she anchors in our hawse.' When the two cables pass directly to their anchors, without crossing or chafing at the *hawse-holes* by which they enter the ship, the vessel is said to have a 'clean hawse.' HAWSES, n. plu. *hăwz'êz*, or HAWSE-HOLES, the holes in the bow of a ship

HAWTHORN—HAWTHORNE.

through which cables are passed. HAW'S'ER. n. -*er*, or HAL-SER, n. *hăwz'ér* a small cable or large towing-line: see ROPE.

HAW'THORN [see HAW], (*Cratægus oxyacantha*; see CRATÆGUS): shrub or small tree, native of Europe, Siberia, and n. Africa, common in Britain, and much planted for hedges and for ornament. It varies in height from 6 or 8 to 20 or 25 ft. It has roundish obovate 3-5-lobed deciduous leaves, and corymbs, generally of white, rose-colored, or sometimes deep crimson flowers, succeeded by a small red fruit (*haws*) with yellow pulp, the central stony part bearing a very large proportion to the pulp. The fruit remains on the tree after the leaves have fallen, and affords winter-food to birds. There are many varieties of H., some having only one style, whilst some have several. The variety called GLASTONBURY THORN—because supposed to have originated at Glastonbury Abbey—is remarkable for its early flowering, often in the middle of winter; though the common kind is not in flower till May or June. The winter flowers of the Glastonbury variety are, however, not generally followed by fruit, and a second flowering often takes place in the same year. The common H. is often popularly called *May*, from the season of its flowering in England. It is also called *Whitethorn*, in distinction from the Sloe or Blackthorn. The use of the H. for hedges is almost universal in Britain. It is sometimes employed as a stock on which to graft apples and other *Pomaceæ*. It attains a great age, and in its more advanced stages, is a tree of slow growth, though, when young, it shoots up rapidly. The wood is very hard, close-grained, and takes a fine polish, but is apt to warp. A fermented liquor, very intoxicating, is made from the fruit in many parts of France.

The H. is valuable as a hedge plant, by reason of its strong and plentiful spines, its long life, and its ready adaptation to very various soils. For this purpose, it is propagated by seed; the haws are laid in a heap to rot, with a mixture of sand or fine mold, and in a year or sixteen months afterward the seeds are sown in ground carefully prepared. The young plants are kept clear of weeds, and often grow to the height of a foot or two ft. in the first season. See HEDGE. H. hedges bear trimming very well. Young H. plants are called *quicks* or *quicksets*, because used to make living (*quick*) fences.

HAWTHORNE, *haw'thawrn*, JULIAN: author: b. Boston, 1846, June 22; son of Nathaniel H. He was a student in Harvard Univ. 1863-4, Harvard Scientific School 1867-8, and the Dresden Polytechnic Schools 1868-9, returned to the United States 1870, and was on the staff of the hydrographic engineers in the New York Dock Dept. till 1872, when he went to Europe, whence he returned to New York 1882. His publications include *Bressant* (1873), *Idolatry* (1874), *Saxon Stories* (1875), *Garth* (1877), *The Laughing Mill* Archibald Malmaison, *Ellice Quentin*, *Prince Saroni's Wife*, *Yellow Cap*, *Sebastian Strome* (1880), *Fortune's Fool* (1883), *Dust and Noble Blood* (1884), biography of *Nathaniel Hawthorne and His Wife* (1885), *John Parmelee's Curse*, and

HAWTHORNE.

Confessions and Criticisms (1886), and a series of detective stories founded on narratives by Inspector Byrnes including *A Tragic Mystery* and *The Great Bank Robbery* (1887-89); and *Another's Crime* (1889).

HAWTHORNE, NATHANIEL: 1804, July 4—1864, May 18; b. Salem, Mass.: author. He passed his early youth on a farm at Raymond, Me.; in consequence of feeble health, returned to Salem 1819, and graduated at Bowdoin College in the class with Henry W. Longfellow, George B. Cheever, John S. C. Abbott, and Horatio Bridge 1825. While at college he contributed tales and verse to local periodicals, and after graduating applied himself closely to literary work. His first romance, *Fanshawe*, was published anonymously at his own expense 1826, and was so unsuccessful that he suppressed it. Soon afterward he completed *Seven Tales of My Native Land*, but vexed at the publisher's delay burned the manuscript. He then contributed essays, short stories, and sketches to the *Salem Gazette* and the *New England Magazine*, and had four of his *Twice-told Tales* published in the *Boston Token and Atlantic Souvenir* 1831, May. In 1836 he became editor of *The American Magazine of Useful and Entertaining Knowledge*, 1837 issued in book-form his *Twice-told Tales*, 1838 became a contributor to the *Democratic Review*, and 1839 was appointed weigher and gauger in the Boston custom-house. He lost his office on the accession to power of the whigs 1841, resumed literary work, published the same year an instalment of *Grandfather's Chair*, and became a member of the Brook Farm Community, with which he remained about a year. In 1842, July, he married Sophia Peabody, and settled in the old parsonage at Concord, Mass., which had been occupied by the Rev. William Emerson and his grandson, Ralph Waldo Emerson. In this quiet retreat he worked with great assiduity, seeing few visitors except Emerson, Thoreau, Channing, and Margaret Fuller; contributed to the *Democratic Review* the stories *Celestial Railroad*, *The Procession of Life*, *Fire Worship*, *Buds and Bird Voices*, and *Roger Malvin's Burial* 1843, and *Rappaccini's Daughter* 1844; and published a second series of *Twice-told Tales* 1845. In 1846 appeared his *Mosses from an Old Manse*, another collection of tales; and the same year his financial pressure was relieved by his appointment to be surveyor of the port of Salem, to which place he had been compelled to remove. He held this office till 1850, and in the interval wrote *The Scarlet Letter*, in the introduction to which he presented a charming and humorous bit of autobiography. The picture of the old official, so old and so wedded to routine that he cannot be convinced that he has been removed from office, and still pursues the course of his former daily life, is most cleverly drawn. On leaving the surveyor's office he removed to Lenox, Mass., and settled in 'the ugliest little old red farm house,' where he wrote *The House of Seven Gables* (1851), *The Blithedale Romance*, and *Life of Franklin Pierce* (1852). *The Scarlet Letter* was the longest of his stories, and the first really successful one; *The House of Seven*

HAXO-CASEMATE.

Gables fully justified popular expectation; and *The Blithedale Romance* attracted wide attention, though appealing to a higher mental plane. When his college friend, Franklin Pierce, became pres. of the United States, H. was remembered in one of the earliest appointments, that of U. S. consul at Liverpool, which he held 1853-57. He then spent three years travelling in England, France, Italy, and Switzerland, and gathering material which appeared in *English Note-Books*, *French*, and *Italian Note-Books*, *The Marble Faun* (1860), and *Our Old House* (1863). After his return to the United States (1860) he made his home in Concord, Mass. He died suddenly in his sleep at Plymouth, N. H., while on the way to the White Mountains with ex-President Pierce. An instalment of the *The Dolliver Romance* was published in the *Atlantic Monthly* in the July following his death; his series of *Note-Books* appeared 1868-72, *Septimus Felton, or the Elixir of Life* (found among his papers) 1872, and an incomplete sketch, *Dr. Grimshaw's Secret* (edited by Julian H.) 1882. A complete edition of his works was published in 12 vols. (Boston, 1883), and his biography has been written by George Parsons Lathrop (1876). Henry James (in the *English Men of Letters* series, 1880), James Russell Lowell (1885), and his son Julian H. (1885). — His wife SOPHIA PEABODY H (1810-71), was a woman of high culture, and poetic and artistic tastes. She illustrated a number of his early tales, and after his death edited his *Note Books*, and published a vol. of her own *Notes in England and Italy* (1868).

HAXO-CASEMATE, n. *hăks'ō*. [from Baron *Haxo* (1774-1838), French gen. of engineers]: in *mil.*, a vault of masonry inside the parapet, built as protection over a gun, but not over its embrasure, and open at the rear to the terreplain.

HAY.

HAY, n. *hā* [Goth. *havi*, grass: AS. *heag*; Icel. *høy*; Dut. *hoy*, grass cut and dried]: cut grass dried and used for fodder. **HAY-COCK**, *hā'kōk*, a conical pile or heap of hay in the field. **HAY-RICK**, *-rik*, hay raised in a pile or heap for preservation in the open air; also **HAY-STACK**. **BOTTLE OF HAY**, *bōt'l* [F. *botte*, a bundle]: in *OE.*, a bundle of hay.

HAY: grass or other plants cut and cured for feeding to animals. Except in very warm regions H. is indispensable to the farmer. It is the principal crop in portions of the United States, and in the country at large is exceeded in value only by Indian corn.

A large number of varieties of grass are grown for H. The best are Timothy, Red-top (called Herd's-grass in the Middle and Southern States), Orchard grass, Fowl Meadow grass, and June grass. The latter is less valuable than the others, but succeeds in a large variety of soils and makes excellent pasturage. At the South, Meadow Oat grass is valuable for hay. Of the leguminous plants grown for H., clover is by far the most useful and the most extensively cultivated. The cow pea is largely grown in the Southern States. Lucerne, or alfalfa, is grown successfully and profitably for H. on the Pacific coast and in portions of the South. Two or more varieties of grass are usually sown together, and clover is frequently sown with grass. The cow pea and lucerne should be grown separately.

The seed from which the H. crop is to be produced is often sown with winter or spring grain, and does not yield a harvest until the second summer. If sown by itself, on good land which has been well prepared, early autumn sowing should give a moderate crop the next year. Separate seeding is more expensive, but usually gives better results than sowing with grain. The land should be well plowed and the surface made extremely fine. A light dressing of fine and well-rotted manure, or of a suitable fertilizer, will be highly beneficial. An effort should be made to obtain grass seed free from that of weeds. Fresh seed is to be preferred, and plump seed should be secured if possible. The quantity to be used will depend upon the kind of grass to be grown. Moderately thick seeding will give a better quality and a larger quantity of H. than thinner sowing. The seed should be lightly covered with a bush harrow, and if the land is in suitable condition it may then be rolled.

The value of H. depends largely on the time at which the materials of which it is composed are cut. At certain stages of their growth plants are so imperfectly developed as to supply but little nutriment. At other stages changes have occurred which have greatly diminished the quantity of valuable elements. When grass stands too long, the starch, gum, and sugar which it contained are largely converted into a woody and comparatively indigestible fibre. If the seeds are allowed to mature, they abstract the nutritive matter from the stalks and leaves, and render them very poor for feeding purposes. Between the stages of incomplete development and the

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ripening of the seed is the period of blossoming. Numberless analyses and experiments have proved that at this time the plant is in the best possible condition to be cut for Hay.

HAY-MAKING: grass is converted into H. by a process of drying, usually by exposure to the direct rays of the sun. By this means the green coloring matter of the plant is removed and the nutritive matter partially changed to woody fibre. The greater the exposure to sun and wind, the more seriously will the quality of the H. be impaired. Slow drying, with slight exposure to the light, will cure the grass so that it will not be injured in the mow, and yet will allow a large portion of the juices of the plant to remain. To secure this, the grass should be cut when free from dew, raked when it is thoroughly wilted, and put up in small heaps or cocks, covered with caps made of cotton cloth, and allowed to stand a day or two. It should then be thrown open, turned once or twice, and thoroughly aired, when it will be ready to cart to the barn or stack. A more common method, which involves less work, is to turn the grass as soon as the top is wilted and let it lie in sun until sufficiently cured to put in in the barn. If the crop is heavy and the grass immature, two days may be required to complete the process. While grass should not be housed when so green as to cause fermentation, it should not be overdried. The greener it can be put in and made to keep well the better will be the quality of the hay.

Clover is far more difficult to cure than the ordinary grasses. If dried in the sun, great care must be used or a large part of the leaves will fall off and be lost, leaving the comparatively innutritious stalks to be put in the barn. If cured in the cock, constant watchfulness will be required to prevent undue fermentation.

In order to aid in its preservation and make it more palatable, salt is often scattered upon the H. when it is put in the mow. From four to eight quarts per ton of H. is sufficient. Many farmers omit its use. During the process of curing, rain or dew falling upon the H. will seriously injure its quality. Water must be entirely removed by subsequent turning and drying, as a small quantity of foreign moisture will cause far more injury in a mow than the juice of grass which is imperfectly cured.

In addition to the ordinary hand implements, the principal machines required in securing the H. crop are the mowing-machine, tedder, and horse-rake. A horse-fork with which to unload H. at the barn or stack is very useful, and on large farms a machine for loading it upon the wagon is sometimes employed.

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HAY, *hā*, **JOHN**: author: b. Salem, Ind., 1839, Oct. 8. He graduated at Brown Univ. 1858, was admitted to the bar at Springfield, Ill., 1861, and immediately afterward appointed by Pres. Lincoln asst. private sec. and subsequently adjt. and aide-de-camp. Excepting while performing staff duty with Gens. Hunter and Gillmore—for which he was appointed col. and asst. adjt. gen.—he was almost constantly with the pres. till his death. After the war he was sec. of legation at Paris 1865–67, chargé d'affaires at Vienna 1867–8, and sec. of legation at Madrid 1869–70. Returning to the United States he was an editorial writer on the New York *Tribune* 1870–76, asst. sec. of state 1879–81, and 1889 resumed leading editorial writing on the *Tribune* after the appointment of Whitelaw Reid to be U. S. minister to France. He is author of *Little Breeches*, *Jim Bludsoe*, and other dialectic poems included in *Pike County Ballads* (1871), *Castilian Days* (1871), and in conjunction with John G. Nicolay, a *History of the Administration of Abraham Lincoln*, published serially in *The Century* magazine (1886–89). He was appointed ambassador to Great Britain 1897, and U. S. secretary of state, 1898.

HAYDEN, *hā'dn*, **FERDINAND VANDEVEER**, M.D., PH.D., LL.D.: 1829, Sep. 7—1887, Dec. 22; b. Westfield, Mass.: geologist. He graduated at Oberlin College 1850, and the Albany (N. Y.) Medical College 1853, immediately began exploring the Dakota 'bad lands,' spent 1854–56 exploring the basin of the upper Mo. river, was appointed geologist to a topographical expedition to the n.w. 1858, and naturalist and surgeon to an expedition for the exploration of the Yellowstone and Mo. rivers 1859. He was in the medical dept. of the Union army 1862, May—1865, May, prof. of mineralogy and geology in the Univ. of Penn. 1865–72, and director of U. S. geological surveys in Neb., Dak., Wyo., Utah, Colo., and Mont. 1867–86. His reports on the famous Yellowstone region (1870–71) led the federal govt. to create the Yellowstone National Park. Besides his annual reports, which are profusely and richly illustrated, he was author of a large number of memoirs and monographs. He was a member of the principal scientific societies of the United States and Europe, and received the degree LL.D. from the Univ. of Penn. 1887.

HAYDENITE, n. *hā'den'īt* [named after Dr. *Hayden*, of Baltimore]: variety of Chabasite, occurring near Baltimore.

HAYDN, *hā'dn*, **JOSEPH**: German composer: 1732, Mar. 31—1809, May 31; b. at the village of Rohrau, on the confines of Hungary and Austria; son of a poor wheelwright; showing great musical talent, he was received, at the age of eight, into the choir of the cathedral of St. Stephen's, at Vienna. Here he remained till his 16th year, acquiring a practical rather than a theoretical knowledge of his art, by singing the music of the best Italian and German religious composers. In that year his voice broke, and he lost his place as a chorister. He gave lessons in Vienna, played in the orchestra, occupied himself with composition, and thus earned a maintenance. At the same time, he studied with extreme care the first six sonatas

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of Emanuel Bach, which had accidentally fallen into his hands. His position, however, continued very critical, and he was on the verge of starvation when he had the good fortune to obtain as a pupil a little girl, Signora Martinez, who was being educated at Vienna under the care of the poet Metastasio. H. embraced this opportunity of making himself acquainted with the Italian language. Subsequently, Metastasio introduced him to the celebrated singer Porpora, who employed him to accompany him on the piano during his singing lessons, and from whom he obtained the instruction in composition that he so anxiously desired. In the latter part of 1750, he composed his first quartet for stringed instruments, and from this period his prospects rapidly brightened. In 1759, a certain Count Morzin engaged him as music director and composer, 'with a salary of 200 florins, free lodgings, and table with his secretaries and other officials.' About this time, H. married the daughter of a hairdresser, who had been kind to him in his days of penury: the marriage did not prove a happy one: 'It is nothing to her,' said H. near the close of his life; 'whether her husband be a cobbler or an artist.' Her ambition seemed to be to squander H.'s earnings. In 1760, Prince Esterhazy placed him at the head of his private chapel. For him H. composed his beautiful symphonies (a style of composition in which he greatly excelled all his predecessors), and the greater number of his magnificent quartets. In the symphony known as *Haydn's Farewell*, one instrument after another becomes mute, and each musician, as soon as he has ceased to play, puts out his light, rolls up his music, and departs with his instrument. Pohl believes himself to have proved that the Farewell was an expostulation not against dismissing the band, as is commonly said, but against sending away the wives and children of the musicians from Esterhazy. After the death of Prince Esterhazy, 1790, H. accompanied Salomon the violinist to England, where, 1791-2, he produced six of his *Twelve Grand Symphonies*. His reception was brilliant in the highest degree. In 1794, he made a second engagement with Salomon for England, and brought out the remaining six symphonies. In England first he obtained that recognition which he gained later in his own country. On his return to Austria he purchased a small house with a garden in one of the suburbs of Vienna. Here he composed his oratorios, the *Creation* and the *Seasons*. The former work, the harmonies of which are pervaded with the fire of youth, was written in his 65th year, and is considered by many equal to the finest productions of Handel; the *Seasons* (completed in 11 months) was almost his last work. He died at Vienna.

Although H. composed slowly and very carefully, his works are exceedingly numerous, comprising 118 symphonies, 83 quartets, 24 trios, 19 operas, 5 oratorios, 163 pieces for the baritone, 24 concertos for different instruments, 15 masses, 10 smaller church-pieces, 44 sonatas for the pianoforte, with and without accompaniments; 12 German and Italian songs, 39 canzonets, 13 hymns in three

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and four parts, the harmony and accompaniment to 365 old Scottish songs, besides a prodigious number of diversissements and pieces for various instruments.—Compare Griesinger, *Biographische Notizen über Haydn* (Leip. 1810); *Vie de Haydn* (Paris 1817); Grosser, *Biographische Notizen über Haydn* (Hirschb. 1826); Pohl, *Joseph Haydn* (Part I. 1875).

HAYDON, *hā'don*, BENJAMIN ROBERT: 1786, Jan. 26—1846, June 22; b. Plymouth: English painter. He exhibited his first picture at the Acad. 1807, *Joseph and Mary Resting with our Savior after a Day's Journey on the Road to Egypt*, which found a purchaser in the author of *Anastasi*. It was succeeded by *Dentatus*. H. quarrelled with the Acad. about the hanging of this picture, and his life thereafter was divided between painting and controversy. His pictures brought him admiration, and his wilful temper foes. His difficulties were increased through the stoppage by his father of an allowance of £200 a year. At this period, he had many patrons, and his pictures brought large prices; his *Judgment of Solomon*, for instance, 700 guineas. He made several attempts to be admitted an Associate of the Acad., and when he was refused, he characteristically imputed the refusal to the envy and jealousy of the academicians, and railed against them more bitterly than ever. He visited Paris with Wilkie, studied at the Louvre, and on his return, 1821, he married; and two years thereafter he produced the *Raising of Lazarus*, in some respects the most powerful of his works. His great work, *Christ's Entry into Jerusalem*, was exhibited by himself 1820, but its proposed purchase by the British Institution having fallen through, it afterward formed the nucleus for the American Gallery of Painting. Nothing daunted, H. painted other subjects. He became involved in pecuniary embarrassments, and was finally incarcerated in the King's Bench, from which, after a time, he was released through the assistance of his friends. While in prison he painted the *Mock Election*, which George IV. purchased for 500 guineas. *Napoleon Musing at St. Helena* excited great admiration. In 1836, he was again imprisoned for debt, and was released on a settlement with his creditors. At this time he began a series of lectures on painting and design, which brought him fame and money. When government determined to decorate the new Houses of Parliament with pictures, H. engaged in the competition, and was unsuccessful. This defeat he never entirely recovered. He exhibited two of his latest productions 1846 at the Egyptian Hall, but the exhibition was coldly regarded by the public. This was the drop which made the cup overflow, and he put an end to his life by a pistol shot. See his *Life* by Tom Taylor (1852), and *Correspondence and Table Talk*, by his son (1876).

HAYDUCKS: see HAJDUK.

HAYES, *hāz*, AUGUSTUS ALLEN: chemist: b. Windsor, Vermont, 1806, Feb. 28. He was educated at the military acad. in his native town; studied chemistry under Prof.

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Dana of Dartmouth College; and 1825, distinguished himself by researches into the proximate elements of American medicinal plants, discovering the organic alkaloid Sanguinaria; and 1827, investigated the compounds of chromium. In 1828—having removed to Boston—in connection with the growing manufactories of New England, he devoted himself to the chemistry of commerce, of dyeing, and the manufacture of copper and iron. His numerous papers were published in the *Proceedings* of the Boston Soc. of Natural History, *American Journal of Science*, *Annual of Scientific Discovery*, etc. In 1837, his investigations into the generation of steam and economy of fuel, led to the construction of improved furnaces and boilers. He also discovered the process of reducing pig to malleable iron without loss by the use of the oxides of iron; new processes in copper-smelting, the decomposition of alcohol, and formation of chloroform; and the oxidation of alcohol in the human system. As state assayer of Massachusetts, and in the employ of the Federal govt., he made important investigations into the properties of guano; examined the constitution of sea-water at various depths, and its effects on the copper-sheathing of vessels; and by a series of useful studies and experiments added to the national wealth and the domain of science. He d. 1892, Apr. 18.

HAYES, ISAAC ISRAEL, M.D.: 1832, Mar. 5—1881, Dec. 17; b. Chester co., Penn.: explorer. He was educated to the medical profession, and appointed surgeon to the Arctic expedition under Dr. Kane, with which he returned to the United States 1855, convinced that there existed an open sea around the n. pole, and anxious to head an expedition for its exploration. In this project he was aided by Mr. Henry Grinnell, by the American Geographical and Statistical Soc., and by Sir R. I. Murchison and the Geographical Soc. of London. 1860 June, he fitted out a schooner of 133 tons, and sailed from New York; July 6, penetrated to 82° 45' n. lat., making extensive explorations and observations of the coasts and their inhabitants, and returned to Boston 1861, Oct. In 1868, he published *The Open Polar Sea, a Narrative of a Voyage of Discovery toward the North Pole, in the Schooner United States*; in recognition of which he was awarded a gold medal by the Royal Geographical Soc. of London, and a similar honor by the Geographical Soc. of Paris. In 1869 H. again visited Greenland, and explored its southern coasts.

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HAYES, *has*, RUTHERFORD BIRCHARD, LL.D., nineteenth President of the U.S.: 1822, Oct. 4—1893, Jan. 17; b. Delaware, O. He received a common school education, attended Norwalk Acad. O., was prepared for college at Middletown, Conn., and graduated at Kenyon College, O., 1842, and Harvard Law School 1845. He was admitted to practice in O. 1845, May 10, and established himself at Fremont 1845, and Cincinnati 1849. In 1856 he declined nomination for judge of the court of common pleas, 1858 was elected city solicitor to fill a vacancy, and 1859 was re-elected for a full term. He gave his adhesion to the republican party 1856, and worked earnestly for the success of its national ticket that year and 1860. In 1861, June, he was appointed by the gov., maj. of the 22d O. vols., of which William S. Rosecranz was col., and Stanley Matthews lieut.col.; was ordered to duty in W. Va., and in Sep. became judge-advocate of the dept. of O. He was promoted lieut.col. 1861, Oct. 15; commanded the regt. till 1862, Dec., led the charge and was wounded at the battle of South Mountain, was promoted col. 1862, Oct. 24; was on sick leave a month, and soon after his return to the field was placed in command of the 1st brigade of the Kanawha div., which he retained till 1864, Sep., when he succeeded to the div. command. During this period he led an expedition from s.w. Va. to O. to check the Confederate raider Morgan; commanded a brigade in Crook's expedition to cut the Confederate lines of communication between Richmond and the s.w., led his brigade in storming the fortifications on the top of Cloyd mountain, was in the two battles at Winchester, and in the latter with 40 men captured a Confederate battery, distinguished himself in the pursuit of the Confederates under Early especially at Fisher's Hill, and for his gallantry at Cedar Creek was promoted brig.-gen. In 1864, Aug., he was nominated for representative in congress, and though he would not leave the field to make a personal canvass, was elected. He was brevetted maj.gen. of vols. 1865, Mar. 13, resigned his commission June 1, and took his seat in congress Dec. 4. In 1866 he was re-elected, but resigned the seat on being elected gov. of O. 1867; in 1869 he was re-elected gov.; 1872 was defeated for congress; and 1875 was elected gov. a third time. Through his congressional and gubernatorial services he had been an uncompromising advocate of honest money—coin against irredeemable paper; and shortly after his third inauguration as gov. the O. republican state convention passed a resolution to present his name to the national convention as a candidate for the presidential nomination (1876, Mar. 29). The national convention assembled June 14 following: James G. Blaine, Benjamin H. Bristow, Oliver P. Morton, and Gov. H. were the principal candidates before it; and the latter was nominated on the 7th ballot, receiving 384 votes, to 351 for Blaine, and 21 for Bristow. In his letter of acceptance he outlined the policy that he believed should be pursued, and particularly favored civil-service reform, resumption of specie payments, and pacification of the South. The national democratic convention nomi-

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nated Gov. Samuel J. Tilden of N. Y. for the presidency, and the returns of the election showed a popular vote of 4,033,950 for the republican candidates and 4,284,855 for the democratic. But in the counting of the votes by the returning boards, especially in Fla., La., and S. C., the republicans charged fraud upon the democrats. Both parties claimed the election, and partisan feeling reached fever-heat. In the emergency both parties agreed to the creation by congress of a special tribunal to canvass the returns thoroughly, and to declare who was legally elected. On 1877, Mar. 2, the pres. pro tem. of the U. S. senate announced the republican candidates had received 185 electoral votes—a majority of one—and were elected. (For details and proceedings of this tribunal see ELECTORAL COMMISSION, PRESIDENTIAL.) Immediately after his inauguration he put in execution his plans for settling the serious difficulties in the Southern States, with the result that the Nicholls govt. was recognized in La., and the Hampton in S. C., and the U. S. troops were withdrawn from both capitals Apr. 10, 20. As a further evidence of his policy of conciliation he called to his cabinet a prominent citizen of the South, who had been a Confederate officer and had opposed his election. After the adjustment of the political imbroglios in La. and S. C. he turned his attention to the civil service, and (June 22) issued an order which recited that 'no officer should be required or permitted to take part in the management of political organizations, caucuses, conventions, or election campaigns,' and that 'no assessment for political purposes, on officers or subordinates, should be allowed.' His efforts to bring about a resumption of specie payments resulted in the accumulation by the treas. dept. of sufficient coin to offset the outstanding legal-tender notes, and resumption was accomplished without friction 1879, Jan. 1. Through his entire administration congress seemed but little inclined to heed his recommendations, and even when the senate had a republican majority his work was greatly retarded and several times his hands were hopelessly tied, as in the failure to make necessary appropriations for the support of the army (1877), for the expenses of the govt. (1879), and the support of the civil service commission; the attaching of legislative riders to appropriation bills which resulted in their defeat, and the legislation to prohibit the employment of U. S. troops at elections. He courageously removed several very prominent office-holders for making the business of their offices subordinate to partisan activity, urged a vigorous enforcement of the anti-polygamy laws, appealed for civil-service reform in the line of competitive examinations, and endeavored to prevent the interference of congressmen in the civil service. During his term he sent 10 veto messages to congress, and the majority were sustained. After his retirement from office he resumed residence at Fremont, O., he received the degree LL.D. from Kenyon College and Harvard, Yale, and Johns Hopkins Universities, and became pres. of the John F. Slater Educational Fund (for the Southern States), pres. of the National Prison

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Reform Assoc., and trustee of a number of educational and benevolent institutions.

HAYESINE, n. *hā'ēs-în* [after *Hayes*]: borate of lime, known also as *Borocalcite*, *Hydroborocalcite*, *Tiza*, etc.; a mineralogical curiosity until 1851; now important in the arts. It is found in some parts of Peru in rounded nodules rarely larger than a good sized orange, imbedded in the soil. It is always associated with the nitrate of soda. Its chemical composition is $\text{CaO} \cdot 2\text{B}_2\text{O}_3 + 3\text{H}_2\text{O}$; or boracic oxide, 45.98; calcium oxide or lime 18.45; water, 35.57. It is used as a source of boracic acid in the manufacture of the borate of soda, extensively employed as a fluxing material for glazing pottery; in glass-making, metallic soldering, etc.: the only other known sources being the boracic acid from the Tuscan springs, and the borax and tincal from Tibet. See **BORAX**.

HAYESITE: see **HAYESINE**.

HAY-FEVER, or **HAY-COLD**, or **HAY-ASTHMA**; also **ROSE COLD**, **PEACH-COLD**, **AUTUMNAL-CATARRH**: catarrhal affection of the nasal or bronchial passages or both, to which certain persons are annually subjected at periods indicated by the various names. It usually begins with the early symptoms of an ordinary cold in the head, proceeds to a stage corresponding with severe influenza, and in its latter course produces almost constant sneezing, running of the eyes, more or less coughing, and a considerable fever. Resort to medical treatment has little if any effect; the only practical remedy is simply a temporary change of air. As it is rarely observed at the sea-shore or on high mountains, a residence at either during the period of distress is the usual course followed by its victims. The mountain resorts in N. Y. and the New England States have become very popular in late years with such sufferers, and at the beginning of the periods when different persons become affected there will be a considerable rush to the 'hay-fever camps.' The affliction is believed to be caused by pollen from some plants. Some persons suffer only in the hay-ing season, others when the air is laden with the perfume of the rose, and others again when peaches have nearly ripened or are handled for preserving. The only permanent cure is removal from the place where the disease prevails; otherwise it is likely to manifest itself every year in spite of medical treatment and temporary sojourn elsewhere.

HAYGOOD, *hā'gŭd*, **ATTICUS GREENE**, D.D., LL.D.: Meth. Episc. clergyman: b. Watkinsville, Ga., 1839, Nov. 19. He graduated at Emory College, Ga., and entered the Meth. Episc. ministry 1859, was Sunday-school editor and sec. of the Meth. Episc. Church South 1870-75, pres. of Emory College 1876-84, editor of the *Wesleyan Christian Advocate* 1878-82, declined election as bp. 1882, and became gen. agent of the John F. Slater Educational Fund for the Southern States 1885. His published works include a prize missionary essay *Go or Send* (1873), *Our Children* (1876), *Our Brother in Black* (1881), *Close the Saloons*

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(1882), *Speeches and Sermons* (1884), and an edition of *Sermons by Bishop George Foster Pierce* (1886). He received the degree D.D. from Emory College 1870, and LL.D. from Southwestern Univ., Tex., 1884. He d. 1896, Jan. 19.

HAYNAU, *hī'now*, JULIUS JAKOB, Baron VON: 1786–1853, Mar. 14: Austrian general. He entered the Austrian service 1801, and advanced in rank, till, 1844, he was appointed field-marshal. During the Italian campaigns 1848, 9, he signalized himself by his ruthless rigor, especially at the capture of Brescia. H. was engaged in the siege of Venice, when he was summoned by the emperor to Hungary, 1849, May, to take supreme command of the forces in that country. The storming of Raab, the advance southward, the occupation of Szegedin, and the engagements on the Theiss, all were the work of Haynau. But his atrocious severity toward the defeated Hungarians, and especially his alleged flogging of women (a charge denied by H.), excited the detestation of Europe. In 1850, he was dismissed from the public service, not for his cruelty, however, but for the intractability of his disposition. In the same year, he was brought into unenviable notoriety on the occasion of his visit to the brewery of Messrs. Barclay and Perkins during his stay in London, when he was assaulted by the draymen, and barely escaped with life. For this insult the British govt. declined giving any satisfaction. Subsequently visiting Belgium and France, he was received by the populace with strong dislike; but by the vigilance of the authorities was preserved from actual insult. Baron Schönbals, in a biography of his friend H. (Grätz, 1853), tries to exonerate him from the accusation of being either constitutionally or intentionally cruel, and asserts that he only acted in obedience to the orders of his masters: this view has not found general acceptance. H. died at Vienna.

HAYNE, *hān*, ISAAC: 1745, Sep. 23—1781, Aug. 4; b. S. C.: soldier. He was a planter and iron manufacturer in Beaufort co., S. C., at the beginning of the revolutionary war, became col. of a cav. regt., and was captured by the British and paroled 1780. In the following year he was ordered to join the British army in spite of the terms of his parole, but instead raised a regt. of local militia and again served in the patriot army. He was a second time taken prisoner, and without any trial was hanged.

HAYNE, PAUL HAMILTON: 1831, Jan. 1—1886, July 6; b. Charleston: poet. He graduated at the College of S. C., studied law and practiced sometime, became editor of *Russell's Magazine* and the *Charleston Literary Gazette*, gave up law for literature, was an aide on Gov. Pickens's staff (Confederate) in the early part of the war of secession, became impoverished by the war, and established himself in the pine-lands near Augusta, Ga. He was feeble from a child, and during his later years supported his family with his pen under distressing conditions. He has been called the poet laureate of the South. His published works include *Poems* (1855), *Sonnets and Other Poems* (1857),

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Avolio, a Legend of the Island of Cos (1859), *Legends and Lyrics* (1872), *The Mountain of the Lovers, and Other Poems* (1873), *Lives of Robert T. Hayne and Hugh S. Legare* (1878), and a complete edition of his poems (1882).

HAYNES, *hānz*, JOHN: d. 1654, Mar. 1; b. Copford Hall, Essex, England: statesman. He came to America with the Rev. Edward Hooker 1633, was appointed asst. Gov. of Massachusetts Bay colony 1634, and gov. 1635, removed to Conn. 1636, was chosen its first gov. 1639, and was re-elected every alternate year till his death. He was one of the committee of 5 who framed the first constitution of Conn. 1638, and was noted for ability, influence, and benevolence.

HAYNES, LEMUEL: 1753, July 18—1833, Sep. 28; b. W. Hartford: Congl. minister. He was a mulatto, brought up in domestic service, volunteered as a revolutionary soldier, joined the minute men 1775 and the expedition to Ticonderoga 1776, worked on a farm in Granville, educated himself, studied Greek and Latin with notable success, was approved as a candidate for the ministry 1780, supplied a Congl. church in Granville, and was ordained 1785. He preached at Torrington two years, Rutland 30 years, and Granville 11, and published a *Sermon against Universalism* (1805).

HAYS, *hāz*, ALEXANDER: 1819, July 8—1864, May 5; b. Franklin, Venango co., Penn.: soldier. He graduated at the U. S. Milit. Acad. 1844, July 1, served through the Mexican war, resigned from the army and engaged in the manufacture of iron 1848, studied civil engineering and practiced it 1854–61, was appointed col. 63d Penn. regt. and capt. 16th U. S. inf. 1861, May; promoted brig.gen. vols. 1862, Sep. 29; wounded at Chancellorsville, commanded 3d div. 2d corps after Hancock's fall at Gettysburg, brevetted col. U.S.A. and assigned to command defenses at Washington, and killed in the first day's battle of the Wilderness.

HAYS, ISAAC, M.D.: 1796, July 5—1879, Apr. 13; b. Philadelphia: physician and editor. He graduated at the Univ. of Penn. 1816, and its medical dept. 1820; was editor of *The American Journal of Medical Sciences* 1827–69, founded *The Medical News*, 1843, and *The Monthly Abstract of Medical Science*, 1874, edited Wilson's *American Ornithology* (1828), Hoblyn's *Dictionary of Terms used in Medicine and the Collateral Sciences* (1846–55), Laurence's *Treatise on Diseases of the Eye* (1847), and Arnott's *Elements of Physics* (1848); prepared the *Code of Ethics* of the American Medical Assoc., and was pres. of the Acad. of Natural Sciences 1865–69, a founder and sec. of the Franklin Institute, member of the College of Physicians, and a founder of the American Medical Association.

HAYS, WILLIAM: 1819–1875, Feb. 7; b. Richmond, Va.: soldier. He graduated at the U. S. Milit. Acad. 1840; entered the artill. branch of the army; was promoted 1st lieut. 1847, capt. 1853, maj. 1863; appointed brig.gen. of vols. 1862, Nov., and brevetted col. and brig.gen. U.S.A.,

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at the close of the civil war. He served with the light artill. through the Mexican war, in the Indian wars in Fla. and Dak., commanded the brigade of horse-artill. in the Army of the Potomac 1862, and the reserve artill. at Antietam and Fredericksburg, was wounded and taken prisoner at Chancellorsville, provost-marshal-gen. of the s. dist. of N. Y. 1863, Nov.—1865, Feb., and commanded the reserve artill. before Petersburg and to the close of the war.

HAYS, WILL SHAKESPEARE: balladist: b. Louisville, Ky., 1837, July 19. He received a collegiate education, was amanuensis to George D. Prentice, editor of the *Louisville Journal*; and for many years was an editorial writer on the *Journal*, *Democrat*, and *Courier-Journal*, of Louisville. In early boyhood he learned to play on various musical instruments without a teacher; published his first ballad, *The Little Ones at Home*, 1856, and his first ballad set to his own music, *Evangeline*, soon afterward. His songs have had enormous sale in the United States and in England, and many of his melodies have been used by Swiss, French, and Italian music-box manufacturers. His most popular ballads are *Nora O'Neal*; *Driven from Home*; *Mollie Darling*; *Wandering Refugee*; *Nobody's Darling*; *Write Me a Letter from Home*; *Shamus O'Brien*; *We Parted by the Riverside*; *Good-by, Old Home*; *Drummer Boy of Shiloh*; *The Moon is out To-night, Love*; and *Save One Bright Crown for Me*.

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HAYTI, *hā'tī*, or **HAITI**, or **SANTO DOMINGO**, or **HISPANIOLA**: after Cuba, the largest of the W. India Islands, now divided into the independent states of H., and the Dominican Republic (q v.). It is nearly equidistant from Porto Rico on the e., and from Cuba and Jamaica on the w., with the Caribbean Sea on the s., and with the Bahamas and the open ocean on the n. H. is in n. lat. $17^{\circ} 37' - 20^{\circ}$, and in w. long. $68^{\circ} 20' - 74^{\circ} 28'$. It belongs to the group of the Greater Antilles, and, like all the principal members of its series, its greatest length (about 400 m.) is in the direction—from w. to e.—of the chain of which it forms a part; its greatest breadth is 160 m.; area, including the islands of Tortuga, Gonaive, etc., about 28,000 sq. m.: Pop. (1901, est.) 1,294,400. The country, as the native name implies, is mountainous, traversed longitudinally by a ridge, which sends out lateral spurs terminating in headlands on either coast. Range is of volcanic origin—a fact still evinced by frequent earthquakes. Cibao, believed to be the loftiest summit, is said to be about 7,000 ft. above sea level. The mountains, richly and heavily timbered, are understood to be susceptible of cultivation almost to their tops. With such a soil well watered, and with a climate tempered by the sea-breezes, H., as a whole, is perhaps the most fertile spot in the W. Indies; while its excellent harbors, more especially those in the Bay of Gonaives on the w., offer facilities to foreign trade—hurricanes, however, occurring in Aug. and Sep. The rivers are inconsiderable, and useless for navigation. Besides several bodies of fresh water, the salt lake of Henriquillo, near the s. shore, claims particular notice, as indicating by its tidal action some subterranean communication with the Caribbean Sea. The productions are coffee, logwood, mahogany, tobacco, cotton, cocoa, wax, ginger, sugar, and salt; and mines of gold, silver, copper, tin, and iron, though not now worked, are found in many places.

Within little more than an age after 1492, the aborigines had been swept away by the remorseless cruelties of the Spaniards. In connection with this deplorable result, H., already the seat of the first white settlement in America, became one of the earliest fields, in the w. hemisphere, of negro servitude. Next came the buccaneers, during the 17th c., unconsciously avenging the red man's wrongs; and as those marauders were chiefly French, the w. portion of the Island, their favorite haunt, was, 1697, ceded to France by the peace of Ryswick, thus presenting the first important break in the unity of Spanish America. For nearly 100 years, the intruders imported vast reinforcements of Africans; while the mulattoes, a natural incident of the concomitant license, rapidly grew, both socially and politically, into an intermediate caste, being at once uniformly excluded from citizenship, and generally exempted from bondage. In 1791, under the influence of the French Revolution, the mutual antipathies of the three classes—white, black, and mixed—burst forth into what may well be characterized as the most vindictive struggle on record—a struggle which, before the close of the 18th c., led to the

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extermination of the once dominant Europeans, and the independence of the colored insurgents. Thus, as the emancipated bondmen mostly belonged, at least in form, to the Church of Rome, H. now exhibited the only Christian community of negro blood on either side of the Atlantic. In 1801, France sent out a powerful armament to recover her revolted dependency, treacherously seizing and deporting the deliverer of his brethren, Toussaint l'Ouverture. In 1803, however, France was constrained to relinquish the attempt; and 1804, Dessalines (q.v.), aping Napoleon, proclaimed himself emperor of H.; thus reviving the indigenous name of the island, which had been in disuse more than 300 years.

This great change was fatal to the commercial prosperity of French H., decidedly the more valuable section of the land. In its progress, it had destroyed capital in every shape; and in its issue, it could not fail to paralyze labor under circumstances and in a climate where continuous exertion of any kind was equally irksome and superfluous. Nor was the political experience of the lately servile population more satisfactory than its economical condition. Sometimes consolidated into one state, and sometimes divided into two, the country alternated, through the instrumentality of one revolution after another, between despotism and anarchy, between monarchy and republicanism, between a kingdom and an empire. Its only tranquil period of any duration coincided with the rule of President Boyer, 1820 to 43—in the last 21 years comprising not merely the whole of French or Western H., but also the Spanish or eastern portion of the island. H. thus united, besides being immediately recognized by the European powers in general, was soon acknowledged even by France, on condition of paying 150,000,000 francs, or nearly \$30,000,000, compensation to the former planters.

About 1843, the inhabitants of the e. or Spanish portion of H., rising against their Haytian oppressors, formed themselves into a republic called the Dominican Republic (q.v.), which 1861, May, threw itself under the protection of Spain, a connection which was dissolved 1865. The w. portion of the island had been republican in government previous to 1849, when its former president, Gen. Soulouque, proclaimed an empire, and ascended the throne as Emperor Faustin I. In 1859, however, a republic (*République de Haïti*) was again proclaimed and a new constitution adopted. The e., once Spanish, portion still exists as a separate republic, the *República Dominicana*. Of the western portion (Haytian Republic), the area is more than 10,000 sq. m.; pop. abt. 550,000, of which nearly 500,000 are of African descent; the eastern (Dominican Republic) has an area of more than 18,000 sq. m.; pop. abt. 150,000, of which abt. 25,000 are of African descent. In the island there are of the mixed races, abt. 125,000 of Spanish, and abt. 50,000 of French descent. The joint exports of the two republics to Great Britain (1901) were valued at £54,801; imports thence £210,184. Coffee, logwood, cotton, cocoa, and wax are the chief exports. Port-au-Prince,

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chief commercial city of the island, is cap. of the western republic. In *Hayti or the Black Republic* (1884), Sir Spenser St. John, some years British representative there, gives a picture at once melancholy and ludicrous, of the utter savagery dominant in the western state. Official speculation, judicial murder, and utter corruption of every kind, underlie the forms and titles of civilized government; the religion, nominally Christian, is largely *vaudoux* or serpent-worship, in which actual and horrible *cannibalism* even now is reported to exist in some places. Some of the people are not much elevated above African barbarism.

Martial law was proclaimed in the cap. early in 1888, numerous incendiary fires occurred July, a general uprising took place Aug., and Pres. Salomon abdicated and left H. for France, where he died Oct. 10. On his departure a supervisory provisional govt. was established. Gen. Telemaque, aspirant for the presidency, was killed in a riot in Port-au-Prince Sep. 28, and Gen. Legitime organized the govt., and was invested with supreme power. He immediately seized the treas. and war vessels, and assumed a dictatorship. Three depts. among the political divisions of the island protested against his usurpations, and their representatives favored the election of Gen. Hyppolite to the presidency. Both generals took the field, both sides were well supplied with arms. Hippolyte steadily drew nearer the capitol, Légitime made frequent raids into his opponents territory, and a long, stubborn fight seemed imminent. In Oct. the American steamship *Haytien Republic* was seized and condemned on the charge of violating the blockade at Port-au-Prince. The U. S. govt. sent several naval vessels to H. to demand the surrender of the steamship, and she was turned over to Rear-Admiral Luce, Dec. On Dec. 3, Légitime feebly bombarded Cape Hayti from the harbor, and on the 31st nominally closed all the n. ports to foreign commerce. Hippolyte scored success 1889, Jan.; refused proposals of peace from Légitime, and lost the town of Petite Rivière, Apr. France and England wholly, and Germany partially recognized Légitime; the United States declined to recognize either faction. Hippolyte continued successful in the main, and took possession of the capital, Légitime having previously agreed to leave the island. A new constitution was adopted Sep., and Hippolyte was unanimously elected pres. Oct. 27. An American syndicate agreed to furnish Hippolyte's govt. with \$18,000,000 in return for a concession of all railroad, telegraph, mining, bridge-building, and banking privileges. Prior to this war, the imports averaged \$6,000,000 annually. exports \$9,000,000. the United States having the bulk of both. The national debt 1901 was \$27,961,149 (\$12,567,964 foreign), and both foreign and domestic debts were largely increased by the war.

✓ **HAYWARD, n.** *hā'wērd* [see **HAW 1**, and **WARD**]: in *OE.*, a parish or district bounded by *hays*, or *hedges*; the petty officer for the conservation of such inclosures; in *England*, one who keeps the common herd of cattle belonging

HAZÁRA—HAZARD.

to the tenants of a town or of a manor (in *Scot.* called 'shepherd').

HAZÁRA, or **HUZARA**, *hǎz'á-rá*: district of British India in the Punjab; bounded n. by the Black Mountains, Kohistan, and Chilas; e. by the native state of Kashmir; s. by the Rawal Pindi dist.; w. by the Indus river; lat. $33^{\circ} 45' - 35^{\circ} 2' \text{ n.}$, long. $72^{\circ} 35' 30'' - 74^{\circ} 9' \text{ e.}$; 2,771 sq. m. It is a valley, with mountains on both sides, some of whose peaks are 17,000 ft. above the sea; is watered by the tributaries of the Indus, the Kunhar, and numerous small streams; is picturesque in scenery; and has a cultivated area of 393,918 acres. The imports are English piece goods, salt, and indigo; exports ghee, mustard oil, barley, wheat, rice, and live stock. The name H. is supposed to have been derived from a Turki family which entered India in the 14th c. The dist. has been under British rule since the second Sikh war. Pop. (1868) 367,218; of which Mohammedans 346,112.

HAZARAS: see **AFGHANISTAN**.

HAZARD, n. *hǎz'érd* [F. *hasard*—from Sp. *azar*, unlucky throw of the dice: It. *zara*, an unlucky cast: mod. Gr. *zari*, a die]: that which falls or comes unexpectedly; chance; accident; chance of danger; venture; a gambling game played with dice; peril: V. to put in danger; to expose to chance; to risk; to try the chance. **HAZ'ARDING**, imp. **HAZ'ARDED**, pp. **HAZ'ARDOUS**, a. *-érd-ús*, perilous; dangerous; that exposes to the chance of loss or evil. **HAZ'ARDOUSLY**, ad. *-lí*. **HAZ'ARDOUSNESS**, n. *-nēs*, **HAZ'ARDRY**, n. *hǎz'érd-rí*, in *OE.*, temerity; precipitation; a general term for games of chance.—**SYN.** of 'hazard, n.': danger; fortune; probability; peril; risk; jeopardy; hap.

HAZARD, *hǎz'érd*: game at dice, without tables, played by any number of persons. One person, called the *caster* (his opponent who bets with him being called the *setter*), takes the box and dice, and makes a throw (called a *main*), which must be above 4, and not exceeding 9; and if the first throw made is not within these limits, the caster must throw until such a one occurs. After the caster has thrown the main, he throws his own chance. The throws 2, 3, 11, 12 are called *crabs*, and are losing throws for the caster, except in the following cases, viz., 12 when 6 is the main, 11 when 7 is the main, or 12 when 8 is the main; in these cases, and also when the caster's throw is the same as the main, the throw is called a *nick*, and the caster wins. If his throw be not a nick, or a crab, then, if he can repeat the same throw before the main turns up, he wins. If the caster throws crabs, not nicks, or if he fails to repeat his throw before the main turns up, the setter wins the stakes. The setter, on the whole, has slightly the advantage of the caster, especially if 6 or 8 be the main, when his chance is to the caster's in the proportion of 7,295 to 6,961, or 22 to 21 nearly. Hazard is exclusively a game of calculation, and is never played merely with a view to amusement. It is a game for gamblers; and it has been an incitement to the wildest schemes under the name of 'systems' that ever laughed mathematics to scorn. Owing to the intricacy of

HAZARD—HAZEL.

the calculations of probabilities, the odds in favor of the professional player over the amateur are 100 per cent.

HAZARD, *hāz'erd*, ROWLAND GIBSON, LL.D.: 1801, Oct. 9—1888, June 24; b. S. Kingston, R. I.: manufacturer and author. He was engaged as a woolen manufacturer from 1820 till his death. He secured the release from the chain-gang in New Orleans of many free northern negroes 1841—2, was a member of the R. I. assembly 1851—2, 54—5, and senate 1866—7, and received from Brown Univ. the degree LL.D. 1869. Among his works are the following: *Essays on the Resources of the United States* (1864), *Freedom of the Mind in Willing* (1864), *Essays on Finance and Hours of Labor* (1868), and *Causation and Freedom in Willing*, letters to John Stuart Mill (1869).

HAZARIBAGH, *hā'-zā-rē-barō'*: cap. of the dist. of the same name, division of Chota Nagpore, province of Bengal; 240 m. n.w. of Calcutta. The town is really a cluster of hamlets, round a military bazaar, with tilled fields between. Pop. abt. 12,000, mainly Hindus

HAZE, n. *hāz* [Icel. *höss*, gray or dusky in color: Icel. and AS. *has*, hoarse or rough in the throat from a cold]: light vapor; mist; a slight fog. HAZY, a. *hā'zī*, covered or shrouded with light vapor; misty. HA'ZINESS, n. *-zī-nēs*, mistiness.

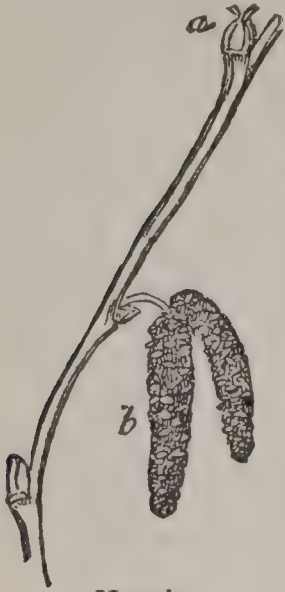
HAZEBROUCK, *āz-brōk'*: small but flourishing town of France, dept of Nord, 25 m. w.n.w. of Lille. The parish church, built 1493—1520, is surmounted by a spire of open work, 240 ft. high. There are some manufactures, and a weekly linen-market. Pop. 7,000.

HAZEL, n. *hā'zēl* [Norw. *hasl*; Dut. *hazel-noot*, the common nut: Dan. *haze*, the beard of nuts]: a shrub or tree whose wood, being very flexible, is used for the hoops of casks, and also in turnery; the *Corylus avellānā*, ord. *Cūpūlifēræ* or *Cōrylācēæ*, see below; in *mining*, a tough fine-grained sandstone: ADJ. of a light-brown color like the hazel-nut. HA'ZELLY, a. *-lē*, of a light brown. HAZEL-NUT, the nut of the hazel-tree.

HAZEL, *hā'zēl* (*Corylus*): genus of trees and shrubs of nat. ord. *Cupuliferæ*, of which the fruit is a nut in a leafy and lacinated cup, the enlarged involucre of the female flower. The male flowers are in cylindrical catkins; the female flowers appear as mere clusters of colored styles at the extremities of buds; the male flowers are conspicuous, the female flowers very small.—The COMMON H. (*C. Avellana*) is a large shrub or low tree, with a bell-shaped fruit-cup, which is somewhat two-leaved, open, and spreading. It is a native of all temperate parts of Europe and Asia; it is common also in North America. H.-nuts of improved varieties are grown to a considerable extent in s. England, particularly in Kent; they are also imported in large quantities from s. Europe. H.-nuts yield, on pressure, about half their weight of a bland fixed oil, often called *nut-oil* in Britain, the H.-nut being popularly known by the term *nut* alone: but in Germany it is walnut-

HAZEN.

oil which is usually called nut-oil. H.-nut oil has drying properties, and is much used by painters; also by perfumers as a basis with which to mix expensive fragrant oils; and it has been employed medicinally in coughs. The wood of the H., though seldom large enough for the purposes of the carpenter, is very tough and flexible, and hazel-rods are therefore much used for making crates, hurdles, hoops for small barrels, etc. The thicker stems of H. are used for making charcoal which is in great request for forges, is esteemed for the manufacture of gunpowder, and if preferred by artists for crayons.



Hazel:

a, female flower; b, male flowers.

Most of the cultivated varieties of the H.-nut are known by the name of *cob-nuts* and *filberts*; the former generally of roundish form; the latter characterized by greater elongation and laciniation of the fruit-cup; the name *filbert* being indeed regarded as a corruption of *full-beard*. The Red Filbert, or Lambert's Nut, is remarkable for having the pellicle which surrounds the kernel of a crimson-red color. The finer kinds of H. are propagated by grafting and by layers. H.-plants for copses are obtained from seed.—The BEAKED H. (*C. rostrata*), a species having a very hairy fruit-cup prolonged into a long beak, is a native of the n. parts of America. Its kernel is sweet.—The CONSTANTINOPLE H. (*C. colurna*), the nuts of which are considerably larger than those of the common H., is a native of the Levant, from which the fruit is exported. It is much used for its oil, but is a less pleasant fruit than many kinds of cob-nut and filbert. A Himalayan species of H. (*C. ferox*) has a spiny fruit-cup, and an excessively hard nut — *Barcelona nuts* are the nuts of a variety of the common H., kiln-dried before exportation from Spain. H.-nuts not subjected to this process cannot be kept long without losing in part their agreeable flavor, and contracting a sensible rancidity, except in air-tight vessels, in which they are said to remain fresh for years.

HAZEN, *hā'zn*, WILLIAM BABCOCK: 1830, Sep. 27—1887, Jan. 16; b. W. Hartford, Vt.: soldier. He graduated at the U. S. Milit. Acad. 1855, July 1; was on frontier and Indian service till 1860, promoted capt. 1861, May 14; appointed col. 41st O. vols. Oct. 29, commanded a brigade at Corinth and Shiloh, distinguished himself at Stone River, promoted brig.gen. vols. 1862, Nov. 29; commanded a brigade in movements preceding the battle of Chickamauga, captured 18 pieces of artillery at Mission Ridge, commanded the 2d div. 15th corps in Sherman's march to the sea, assaulted and captured Fort McAllister and was promoted maj.gen. vols. on the field 1864, Dec. 13, and after receiving all the brevets up to maj.gen. U. S. A. was mustered out of the vol. service 1866, Jan. 15, and appointed

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col. 38th U. S. inf. July. He was an official witness of the Franco-German and Russo-Turkish wars, and succeeded the late Gen. Albert J. Myer as chief signal officer U. S. A. 1880, Dec.

HAZLETON, *hă'zł-ton*: town of Luzerne co., Penn.; on the Lehigh valley and Danville H. and Wilkesbarre railroads; 22 m. w. of Wilkesbarre, 40 m. e. of Danville, 80 m. n.n.w. of Philadelphia. It is noted for its anthracite coal mines which have a capacity of 1,000,000 tons per annum, is lighted with gas and electricity, has 9 churches, 4 graded schools, public library, Rom. Cath. acad. and convent, town hall, several hotels, 2 nat. banks (cap. \$200,000), 1 state bank (cap. \$30,000), 1 private bank, daily and weekly newspapers. H. has become a popular summer resort. Pop. (1880) 6,935; (1900) 14,230.

HAZLITT, *hăz'łit*, **WILLIAM**: distinguished English critic and essayist: 1778, Apr. 10—1830, Sep. 18; b. Maidstone, Kent; son of a (Presb.) Unitarian minister. His father went to America when H. was about five years of age, but returned in two years, and became pastor of a congregation at Wem, Shropshire. In 1793, H. became a student in the Unitarian college at Hackney, but did not like theological pursuits. In 1795, he left the college, and returned to his father's house, where he applied himself to metaphysics and painting. About this time he met Coleridge, who had come to preach in his father's neighborhood, and by the conversation of the poet was awakened to a keener intellectual life. In 1802, he visited Paris, and studied in the Louvre, and on his return he attempted to support himself by portrait-painting; but as he could please neither himself nor his patrons, he relinquished the easel and turned to literature, for which he was much better adapted. In 1803, he went to London, and soon published his essay *On the Principles of Human Action*. In 1808 he married and retired into the country. In 1811 he was again in London. In 1813 he delivered a course of lectures on the History of English Philosophy, and subsequently courses on the English poets. He wrote essays in the *Examiner* in conjunction with Leigh Hunt, republished in a vol., the *Round Table*. Other essays he collected into vols., entitled *Table-talk*, any the *Plain Speaker*. He published also *Characters of Shakespeare's Plays*, and the *Spirit of the Age*. In 1822, he was divorced from his wife, and two years afterward married a second time. His last work was the *Life of Napoleon*, of whom he was an enthusiastic admirer. An edition of his principal works was edited by his son; and *Memoirs of William Hazlitt* were published by his grandson 1867.

The fame of H. rests on his essays, which are in every sense remarkable. He has great acuteness and penetration of criticism, and occasionally a passage, by reason of passionate force and *abandon*, rises into poetry. His essays, though on the whole inferior to Lamb's and Hunt's, contain pages as striking and memorable as any in theirs.

HE, *hē* [AS. *he*; Dut. *hij*; Fris. *hi*; Dan. *han*, *he*]: pron.

HEAD.

of the 3d pers. applied to a man or boy; poss. *his*, obj *him*; often used as a prefix to denote the masc. gen., as *he-bear*: N. a male.

HEAD, n. *hěd* [AS. *heafod*, a head: Dan. *hoved*: Dut. *hoofd*: Icel. *höfud*]: the uppermost part of the body containing the face, etc. (see BRAIN: CONCUSSION: SKULL: CAROTID ARTERY: etc.): a chief person; the chief or principal part of anything; a leader; understanding or mind; a title of heading; source of a stream; the top part; the forepart, as of a ship: chief place, as *head* of affairs; each one among many, as twenty head of cattle; division of a discourse; crisis or height, as to bring or come to a *head*: V. to act as a leader to; to fit or furnish with a head; to lop off; to form a head; to go in front of; to oppose; to restrain: ADJ. chief; principal. HEAD'ING, imp; getting in advance or ahead of: N. that which stands at the head or top, as of a subscription paper; material for heads of any sort. HEAD'ED, pp.: ADJ. come to a head; having a head or top. HEAD'LESS, a. without a head. HEADACHE, n. *hěd'āk*, pain in the head, see below. HEAD'ER, n. a plunge into water by a bather or swimmer head-foremost. HEAD'ERS, n. plu. *-ērz*, bricks placed lengthwise across the wall. HEADY, a. *hěd'ī*, apt to affect the head; intoxicating. HEAD'ILY, ad. *-lī*, in a heady manner; hastily; rashly. HEAD'INESS, n. *-nēs*, rashness; obstinacy. HEAD-BOROUGH, in *England*, formerly, name given to the high-constable of a borough. HEAD-COURTS, in *Scotch law*, the sheriff-courts, now abolished. HEAD-DRESS, an ornamental covering for the head; also HEAD-GEAR, *-gēr*. HEAD'LAND, n. a cape or promontory. HEAD'INES, n. plu. *-līnz*, lines displayed conspicuously at the top of a page or at the beginning of a chapter. HEAD'LONG, a. head-foremost; steep; precipitous; rash: AD. rashly; precipitately; hastily. HEAD-MONEY, poll-tax, see below. HEAD'MOST, a. most advanced. HEAD'PIECE, n. the helmet of the soldier; an ornament at the head of a chapter or page of a book. HEAD'QUARTERS, n. plu. the place of general rendezvous; the residence of the officer or general in command. HEAD-SEA, the heavy sea that materially opposes a ship's progress. HEAD'SHAKE, n. shake of the head intimating doubt or denial. HEAD'SHIP, n. dignity; chief place; authority. HEADSMAN, n. *hědz'măn*, an executioner. HEAD-STALL, n. *-stawl* [Icel. *stallr*, that on which anything stands or is placed]: the part of the bridle which surrounds the head. HEAD'STONE, n. a stone with inscription, placed at the head of a grave. HEAD'STONG, a. self-willed; obstinate; violent; ungovernable. HEAD-TIRE, n. covering for the head of a female, of any kind, generally ornamental; head-gear. HEAD'WAY, n. the motion of an advancing ship. HEAD-WIND, a contrary wind. HEAD OF CATTLE, a single one. HEAD OF WATER, a reservoir. DOWN BY THE HEAD, said of a ship deeply laden at the bows. NEITHER HEAD NOR TAIL, neither beginning nor end; neither the one thing nor the other; confused. ON ONE'S OWN HEAD, on one's own responsibility. OUT OF ONE'S OWN HEAD, without the advice or co-operation of another. OVER HEAD AND EARS,

HEAD—HEADACHE.

completely overwhelmed; entirely. To HEAD OFF, to get before; to intercept. To GIVE THE HEAD, to let go control, as, he gave his horse the *head*. To LAY HEADS TOGETHER, to combine in a plan. To MAKE HEAD AGAINST, to advance, to resist with success.—SYN. of 'head, n.': person; individual; chief; principal; commander; top; knob; crisis; pitch; body; conflux;—of 'head, v.': to lead; direct; govern; influence; behead; lop;—of 'headstrong': ungovernable; obstinate; violent; heady; untractable; stubborn; unruly; venturesome.

HEAD, *hēd*, Sir EDMUND WALKER, Bart., Governor-General of Canada: 1805—1868, Jan. 28; b. Wiarton Place, near Maidstone, Kent, England. He was educated at Oriel College, Oxford, where he was first-class in classics 1827, and became fellow of Merton; succeeded his father, the seventh baronet, 1838; and 1841 became poor-law commissioner. After the breaking up of the poor-law board, he was, 1847, nominated lieut.gov. of New Brunswick. He held this post until 1854, Sep., when he succeeded the Earl of Elgin as gov.gen. of Canada. He was author of *The Handbook of Spanish Painting, a Tour in the Manufacturing Districts*, etc. H. was made a privy councilor 1857, and K.C.B. (civil) 1860. He resigned his post 1861.

HEAD, Sir FRANCIS BOND, Bart.: 1793, Jan. 1—1875, July 20; b. Hermitage, near Rochester, Kent, England: gov. of Upper Canada, and author. He entered the corps of royal engineers, and had attained the rank of cap. when, 1825, he accepted an engagement from a private company to work gold and silver mines on the river Plate. He crossed the Pampas from Buenos Ayres to Chili, and on his return to London, published *Rough Notes of a Journey across the Pampas*. He was made major in the army 1828; and 1835, while assistant-commissary of the army, he accepted, after much urging, the governorship of Upper Canada. When the house of assembly stopped the supplies, as a means of obtaining redress for alleged grievances, H. dissolved the house, and the result of the dissolution was in his favor. An insurrection against his measures, after he had sent away from Upper Canada the whole of the queen's army; and putting himself at the head of the militia, he suppressed it. In 1838, he resigned and was created a baronet. He published a *Narrative* in answer to some severe strictures; he also wrote *Bubbles from the Brunnens of Nassau, A Fagot of French Sticks, A Visit to Ireland, The Emigrant, Life of Bruce the Traveller*, etc.; and he was a frequent contributor to the *Quarterly Review*. He died at Croydon.—His brother, Sir GEORGE H. (1782–1855), also was a soldier, traveller and author.

HEAD'ACHE: pain referred to the front, side, or back of the head, varying in intensity and other characters according to its cause and pathological relations. The most common varieties of headache are dependent on, or connected with, derangements of the digestion, and frequently occur after meals. Such headaches are common among young persons, especially young women leading lives of



Common Hazel (*Corylus Avellana*): a, Male, and b, Female, flowers; c, Fruit.



Heart-wheel.



Lady's Head-dress of the Fourteenth Century.—From a Brass.



Hebe.—Statue by Canova.



Helices.

HEADINESS—HEAD-MONEY.

unnatural confinement within doors amid vitiated air, or given to amusements extending far into the night. The subjects of this form of H. are usually pale and feeble, or delicate and easily flushed. The cure is evident, though its practical application like other reforms in habits, is often difficult. Very different is the H. caused in older persons, and mostly in men, by a 'flow of blood to the head,' in connection with threatened apoplexy. In this case, the habit is usually full, the complexion florid; giddiness is apt to come on in stooping, when also the pain and sense of fullness and throbbing characteristic of the complaint, increase; in some cases, there is an approach to insensibility or double vision, as an additional warning. In these cases, gentle purgation and restricted diet, with out-door exercise, will usually bring cure, unless there is positive organic disease. The periodic H. or *megrin* [Fr. *migraine*, from Gr. and Lat. *hemicrania*, i.e., half the head], otherwise called *brow ache*, is a curious variety closely connected with malaria (see AGUE), and recurs at more or less regular intervals, affecting exactly half of the head up to the middle line. This kind is acute, and is commonly under the control of quinine, which must, however, be given in considerable doses. The sick H. described by Fothergill is among the most distressing and intractable forms, inasmuch as it cannot usually be referred to any distinct removable cause, and is but little under control of remedies. It is to be met, however, like the other forms, chiefly by a regulation of the whole habits of life, especially as regards habitual exercise, which may, indeed, be regarded as the great specific for all kinds of headache.

HEADINESS, HEADLONG, HEADY, etc.: see under HEAD.

HEADLEY, *hěd'li*, JOEL TYLER: author: b. Walton, Del. co., N. Y. 1814, Dec. 30. He graduated at Union College 1839, studied for the Presb. ministry at Auburn Theol. Seminary, was compelled by ill-health to change his profession, and after a foreign tour engaged in literary work. He succeeded Henry J. Raymond as assoc. editor of the New York *Tribune* 1846. He was the first to call attention to the advantages of the Adirondack region as a health resort. He published *Napoleon and His Marshals* (1846), *Washington and His Generals* (1847), *Life of Cromwell* (1848), *Sacred Scenes and Characters* (1849), *The Adirondacks, or Life in the Woods* (1849), *Life of Washington* (1857), *Life of Havelock* (1859), *Chaplains of the Revolution* (1861) *The Great Rebellion*, 2 vols., (1864), *Grant and Sherman, Their Campaigns and Generals* (1865), *Sacred Heroes and Martyrs* (1865), *Farragut and Our Naval Commanders* (1867), *The Achievements of Stanley and other African Explorers* (1877), and a reprint of sketches of Lieut. Strain's expedition to explore a route for canal across Darien (1885). D. 1897, Jan. 16.

HEAD-MONEY: tax of 50 cents imposed by act of congress 1882, Aug. 3, on every immigrant brought to the United States. Previous to the passage of this act the state of N. Y. levied a 'head tax' on all immigrants arriving at

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New York, the funds going to the support of the state board of emigration. A test of the legality of the tax being made in the courts, a decision was rendered that the N. Y. statute was void because it infringed on the prerogatives of national govt. Subsequently the act of congress imposing the tax was questioned in the U. S. supreme court, and a decision affirming the constitutionality of the law was made. The national act provides that the tax shall be paid—by the master or owner of the vessel bringing the immigrants—to the collector of the port, and by him turned over to the treas. of the United States to be used by the sec. to defray the expense of regulating immigration and to relieve such immigrants as are in distress. The act also empowered the sec. of the treas. to contract with state officers to take charge of the local affairs of immigration within such state.

HEAL, *v.* *hēl* [AS. *hælan*, to cure: Ger. *heil*, whole: Icel. *heila*, heal—from *heil*, hale: Gr. *holos*, whole, entire]: to cure of a disease or wound; to restore to soundness or health; to reconcile; to grow healthy or sound. HEAL'ING, *imp.*: ADJ. mild; curative; gentle: N. act or power of curing. HEALED, *pp.* *hēld*. HEAL'INGLY, *ad.* *-lī*.

HEALDS, *n. plu.* *hēldz*, the harness for guiding the warp-threads in a loom: see HEDDLE. In weaving, the threads of the warp are so arranged, that at each passage of the shuttle forward and backward a certain number of the warp threads are raised up, and the remainder drawn down; this is done either with vertical threads, or lines, with a small loop in the middle, through which the warp thread is passed, there being one of the vertical threads for each horizontal or warp thread. The vertical threads are called healds; and as there is continual wear upon them, they should be of considerable strength. They require also to be particularly smooth and round, that they may not, by their friction in moving up and down, chafe the threads of the warp. Hence the manufacture of heald yarns is a peculiar one. For some purposes, the healds are made of metal—also a special manufacture. Heald-machines have been invented for making thread healds without knots, as the knot made by the loop is a great impediment to the free action of the heald. One is so constructed as to double and twist the single yarn, and at certain points braid and plait the yarn forming the eye or loop of the heald without knot of any kind: by this machine a series of healds can be made in a continuous cord, requiring only to be cut into lengths for use. There is also a machine which fits metallic eyes or loops in the heald.

HEALTH, *n.* *hēlth* [from *heal*, from same root as HALE, WHOLE]: sound state of the body, in which the parts perform freely their natural functions; mental vigor; moral purity; divine favor. HEALTH'FUL, *a.* *-fūl*, wholesome; salubrious. HEALTH'FULLY, *ad.* *-lī*. HEALTH'FULNESS, *n.* HEALTHY, *a.* *hēl'thī*, in a sound state of body; having health; vigorous (often improperly used for *healthful* or *salubrious*). HEALTH'ILY, *ad.* *-ī-lī*. HEALTH'INESS, *n.* BILL OF HEALTH, a certificate of a consul, etc., as to the

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health of a crew, when the ship has come from a suspected port, a clean bill, a suspected bill, and a foul bill, are the three short names given to the several certified degrees of health. In *Scot. law*, the term denotes an application by a prisoner to be allowed to live out of the prison, on the ground of ill-health. — SYN. of 'healthy'. wholesome; salutary; sound; hale; healthful (but wholesome, salutary, salubrious, are properly syn. not of *healthy* but of *healthful*).

HEALTH: state of body or mind opposed to disease (q.v.), and characterized by the integrity, wholeness, or soundness [Lat. *sanus*] of all the parts and functions which constitute a living being. In the restricted and ordinary sense, H. is understood as referring chiefly to the body, and as indicating a perfect and harmonious play of all the functions which permits a man to be all that his proper nature implies. Even in this sense absolutely bodily health is one of the rarest of endowments; in common language, accordingly, the term is accepted with indefinite limitation, to indicate a state consistent with a life reaching its ordinary physiological limit without any manifest and considerable departure from the ideal standard.

As the absolute and extreme duration of human life is uncertain, it is usually to regard as a healthy state of the system that in which a moderate degree of activity, without pain or inconvenience, is maintained beyond the limit of threescore years and ten, as indicated by the Psalmist. In fact, however, no considerable community of human beings approaches this term of life on an average of cases. Even where the adults are more than commonly long-lived, there is always a considerable mortality at very early ages, which tends to reduce the *statistical vitality* of the whole community below the point which would be indicated by an average of 70 years for the population at large. Thus, in a population dying at the rate of only 15 in 1,000 annually (the lowest permanent rate in the returns of the registrar-general for England), the average age at death of the community, supposing the population to be absolutely free from change, would be only 66·6; and in the case of a death-rate of 20 in 1,000, the average age at death would be 50; while a death-rate of 25 in 1000 (actual death-rate of London, most healthful of the great European capitals) would correspond to an average age at death of not more than 40. Setting aside fluctuations of population, which always affect the result of such calculations, the average duration of life in England and in Wales is about 45 years, and in Scotland somewhat less than 50 years; and to the extent expressed by these figures, the health of these two countries falls short of the ideal standard. See VITAL STATISTICS. This department of science has assumed great importance of late years, in Britain and the United States, through efforts to improve the sanitary condition of great towns and country districts by improved drainage and sewerage, a regulated supply of pure water, and the inspection, in certain circumstances, of lodging-houses, and even of private dwellings, to prevent overcrowding, and other manifest causes of the spread of

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epidemic disease. It is known that the average length of human life has increased in the present century. The great practical reforms which tend toward this constitute the object of the 'Public Health' movement: see **SANITARY SCIENCE**.

NATIONAL BOARD OF HEALTH.—The act of congress establishing this body was approved 1879, Mar. 3, and provided for the appointment of 7 civilian physicians, one army surgeon, one naval surgeon, one medical officer of the U. S. marine hospital service, and one representative of the dept. of justice. The act prescribed that the board should obtain information on all matters affecting the public health, and advise the several depts. of the federal govt., the executives of the several states, and the commissioners of the D. C., on all questions submitted by them, whenever in the opinion of the board such advice might tend to the preservation or improvement of the public health. The act also provided that the board should ascertain the views of leading sanitary organizations and scientists in order to perfect a plan for a permanent board to act in co-operation with state and municipal boards, in preventing the introduction of infectious diseases from foreign ports, or from one state to another. During its first year the board had the co-operation of 20 state boards; sent a special commission to Cuba to investigate the causes of yellow fever there and suggest measures to prevent its introduction therefrom into the United States; made a thorough sanitary survey of Memphis with a view to removing causes which might bring a recurrence of yellow fever there; and especially examined the questions of diseases of food-producing animals, disinfectants, adulterations in food and drugs, sewage, and quarantine. Since the permanent organization of the board, it has greatly enlarged the sphere of its functions and applied itself to the study of the various questions affecting the public health in any way. Its representatives co-operated with the state and special boards during the yellow fever epidemic at Jacksonville, Fla., 1888, and with the Penn. state board after the terrible disaster at Johnstown 1889.

STATE BOARDS OF HEALTH.—These are all authorized by constitutional provisions or legislative enactments for the purpose of exercising a general supervision over all matters liable to affect the health of the people of the state at large, and of aiding municipal and local boards in unusual and alarming emergencies. Their chief function is to prevent the introduction into the state from foreign ports or other states of persons, animals, or materials infected with contagious diseases or germs, to enforce a strict quarantine wherever a disease becomes epidemic, and to take all needful measures to prevent local epidemics from defective sewage, the pollution of running streams, or other sources. Such boards also have charge of state systems of vital statistics. Mass. was the first state to create such a board (1869), and nearly all the states and territories have followed her example.

MUNICIPAL BOARDS OF HEALTH.—These are constituted under state laws by municipal govts., and vary in the num-

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ber of their officers from the necessarily large body composing the joint boards of New York and Brooklyn known as the Metropolitan Board of Health, to the single physician of smaller cities known as the Health Officer. Some cities substitute an aldermanic committee on health for a municipal board, and appoint or elect a local physician for expert advisor. A very suggestive evidence of the efficacy of municipal boards is found in the report of the sanitary supt. of New York 1889, June 20, which showed that of the 40,175 deaths of the year 24,842 occurred in the tenement-houses; that the death-rate was highest (23·52) in the wealthiest portion of the city and lowest (22·55) in one of the most densely-crowded districts in the civilized world, almost entirely occupied by tenement-house people; and that for several years the highest general death rate (26·60) was in the most favored sections, and the lowest (22·71) among the tenements—the tenement district having been especially under supervision by the public health officials.

HEALY, *hē'li*, **GEORGE PETER ALEXANDER**: portrait-painter: b. Boston, 1813, July 15. In 1836 he removed to Paris, where he spent the greater part of his life, though passing some years in Boston, Chicago, and Rome. Besides painting nearly 600 portraits within 20 years, he completed *Webster's Reply to Hayne*, 130 portraits (in Faneuil Hall, Boston) 1851, *Franklin before Louis XVI.*, 1855, and several portraits for the centennial exhibition at Philadelphia 1876, and the *Paris Salon*, 1878. He was an honorary member of the National Acad. of Design, and contributed to many of its exhibitions. His portraits include many distinguished people of the United States and Europe. He d. 1894, June 4.

HEAM, *n. hēm* [AS. *hame*, the birth, the womb]: the after-birth among beasts.

HEAP, *n. hēp* [AS. *heap*; Ger. *haufe*; Icel. *hópr*, a heap, a crowd: Dut. *hoop*, a heap]: a pile or mass consisting of many single things; a collection, as of ruins: V. to throw or lay together single things in a mass or pile; to accumulate; to amass or lay up. **HEAP'ING**, imp. **HEAPED**, pp. *hēpt*. **TO HEAP UP**, to accumulate in great quantity.—**SYN.** of 'heap, v.': to amass; pile; collect; crowd; throng; cluster.

HEAR, *v. hēr* [AS. *hyran*; Icel. *heyra*, to hear: Swiss, *hor*, an interjection to still an unquiet ox: Swiss, *hören*; Ger. *hören*; Goth. *hausjan*, to hear]: to perceive by the ear; to attend or listen to willingly; to attend; to listen; to obey; to try in a court of law, to be told; to receive by report; to receive intelligence or news; in *OE.*, to bear a name; to acknowledge as a title. **HEAR'ING**, imp.: N. the faculty or sense by which sound is perceived: see **EAR**: audience; judicial trial; extent within which sound may be heard. **HEARD**, pp. *hērd*, did hear. **HEARER**, *n. hēr'ér*, one who. **HEARSAY**, *n. hēr'sā*, report; rumor; common talk (see **HEARSAY EVIDENCE**). **HEAR, HEAR**, an exclamation calling forcible attention to certain words of a speaker, while speaking, without necessarily expressing approval. **HEAR-ING IN PRESENCE**, in *Scot. law*, the hearing of a difficult or

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important case before the whole of the 13 judges of the court of session. HEARING OF A CAUSE, trial in a court of equity in the United States, on the merits of a case—an 'equity cause' being distinguished from a 'common-law action.' HEARING-TRUMPET, an instrument for collecting sounds and conveying them to the ear.

HEARD'S ISLAND, *hêrdz*: in the Antarctic or S. Indian Ocean: lat. 53° 2'—53° 14' s., long. 73° 30'—72° 30' e.; 24 m. long, 9 m. broad; highest point Kaiser Wilhelm Peak, 6,000 ft.; discovered 1853, Nov. 25, by Capt. Heard.

HEARKEN, v. *hâr'kn* [from *hark*; AS. *hyrenian*; O. Dut. *horcken*, to hearken]: to attend to what is uttered; to listen; to give heed to. HEARKENING, imp. *-kn-ing*. HEARKENED, pp. *hâr'knd*. HEARKENER, n. *hâr'kn-er*, one who.—SYN. of 'hearken': to attend; listen; hear; heed; grant.

HEAR'SAY EV'IDENCE: evidence given in a court of justice at second-hand, when the witness states not the things which he himself saw or heard, but what somebody else said. This evidence is, as a general rule, inadmissible, because the axiom is, that the best evidence that can be had must be produced; therefore each witness must be confined to stating what he knows of his own personal knowledge, or what he has become aware of by the aid of his own senses; and as he is sworn to the truth, his truthfulness is thus secured, as far as human testimony can be so. If evidence were admitted at second-hand, there would be no limit to its uncertainty, and there would be thus introduced vague statements of absent persons, who not being sworn when they made them, are therefore incapable of being punished if they speak falsely, and who cannot be cross-examined. Though this is the general rule, yet there are a few exceptions, unavoidable, owing to the nature of the thing. Among the exceptional cases is that of a dying declaration, i.e., statements made by persons mortally wounded and in the prospect of death, which statements are in England admitted only in criminal cases, and on a charge of manslaughter or murder. In Scotland, such declarations are admitted in all cases of violence, and though the party at the time did not believe he was dying. In the United States, a dying declaration is admitted as evidence, only in a criminal case, and only when the person making such declaration, spoke in expectation of death, with no hope of recovery.

HEARSE, n. *hêrs* [OF. *herce*; F. *herse*, a harrow made in a triangular form, then the name of the iron frame for candles placed at the head of the funeral carriage, and finally applied to the carriage in which coffins are conveyed: OF. *herce*; It. *erpicce*—from mid. L. *hirpicem*, a harrow]: a carriage for conveying the dead to the grave: V. to inclose in a hearse. HEARS'ING, imp. HEARSED, pp. *hêrst*. HEARSE'-LIKE, a. suitable to a funeral; mournful: see also HERSE.

HEART, n. *hârt* [AS. *heorte*; Dut. *hart*; Icel. *hjarta*; Goth. *hairto*; Skr. *hardi*; Gr. *kardîā*, the heart]: the well-known organ in animals which, by alternately contracting and expanding, sends the blood through the arteries, to be

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again received by it from the veins (see CIRCULATION OF THE BLOOD): the vital, inner, or chief part of anything; the centre or interior; the seat of the affections and passions; disposition of mind; courage; spirit: V. to become close or hard in the centre, as a cabbage. HEART'ING, imp. HEART'ED, pp. HEART'LESS, a. void of feeling or affection; faint-hearted; without courage. HEART'LESSLY, ad. -lĭ. HEART'LESSNESS, n. dejection of mind; want of courage. HEART'ED, a. laid up or sealed in the heart—generally used as the latter part of a compound, as *hard-hearted*. HEART'SOME, a. -sŭm, merry; lively. HEARTY, a. *hárt'ĭ*, proceeding from the heart; warm; sincere; zealous; full of health; vigorous; plentiful, as a meal. HEARTILY, ad. -lĭ, from the heart; fully. HEARTINESS, n. state of being hearty; sincerity; ardor; eagerness of appetite. HEART-ACHE, anguish of mind; sorrow. HEART-BLOOD, blood from the heart; the life. HEART-DEEP, rooted and felt in the heart. HEART-BREAKING, overpowering with grief or sorrow. HEART-BROKEN, a. intensely grieved or afflicted. HEART-BURN, n. pain, heat, and uneasiness about the region of the stomach. HEART-BURNING, a cause of discontent; deep-seated, secret enmity. HEART-DEAR, much beloved. HEART-EASE, quietness; tranquillity. HEART-FELT, a. deeply and sincerely felt. TO TAKE HEART OF GRACE, to pluck up heart; to take good heart. HEART-GRIEF, in *OE.*, deep sorrow. HEART-PIERCING, very acute or affecting. HEART-RENDING, deeply afflictive. HEART-SEARCHING, searching the secret thoughts and purposes. HEART'S-EASE, n. *hártz'ez*, a wild and cultivated plant; the *Viola tricolor*, ord. *Viólacææ*; the violet or pansy. HEART-SICK, sick at heart; pained in mind. HEART-SICKENING, sickening or paining the heart. HEART-SORE, deeply wounded; that pains the heart. HEART-STIRRING, moving the feelings; also HEART-TOUCHING. HEART-STRINGS, the nerves or tendons supposed to brace or sustain the heart. HEART-STRUCK, fixed and rooted deeply in the heart; impressed indelibly on the mind; dismayed by sudden fear or bad news. HEART-WHEEL, a contrivance for converting circular into rectilinear motion. HEART-WOOD, the innermost layers of wood in exogenous trees, more deeply colored and harder than the rest; the duramen. HEART-WHOLE, with the affections yet untouched; having the vital energies yet unimpaired. HARD-HEARTED, unfeeling; cruel. FAINT-HEARTED, wanting in courage; liable to sink under difficulties or trials. AT HEART, as regards the heart; really. BY HEART, fixed in the memory; in a most thorough manner. TO BREAK THE HEART, to reduce to despair or hopeless grief. TO FIND IN THE HEART, to be willing or disposed. TO SPEAK TO ONE'S HEART, to speak home to; to encourage. TO LAY TO HEART, to be much affected. TO LOSE HEART, to become discouraged. TO SET THE HEART ON, to fix the desires on. TO TAKE TO HEART, to be much concerned about; to be cast down and depressed in spirit by. WITH ALL MY HEART, with right good-will; sincerely. GET OR LEARN BY HEART, to commit to memory. HEARTY-FALE, in *OE.*, good for the

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heart.—**SYN.** of 'heart, n.': affection; inclination; memory; ardor; conscience; strength; power; vigor; efficacy; life;—of 'heartily': really; sincerely; cordially; actively; diligently; vigorously; eagerly; zealously; warmly; ardently; earnestly;—of 'hearty': undissembled; strong; hard; durable; cordial; frank; candid; open; ingenuous; real; unfeigned; earnest.

HEART, DISEASES OF THE: class of serious, often fatal, disorders affecting the great centre of the circulation, the accurate knowledge of which may be dated from the application of Auscultation (q.v.) and Percussion to diagnosis. The great names of Corvisart and Laennec stand foremost in the modern investigation of cardiac diseases—Dr. Hope of London, and a great number of living physicians, having largely contributed to the existing knowledge of the subject, which had, however, been carefully studied by Morgagni and the great morbid anatomists of the 18th c., as well as by Senac and Testa.

Diseases of the heart may be roughly divided into functional and organic—in the former of which no appearances adequate to account for the symptoms are found in the dead body, while in the latter such appearances are found. To the functional class belong simple palpitation, syncope, and the peculiar disorder termed angina pectoris; to the organic class, hypertrophy of the heart, dilatation of the cavities, with various structural diseases of the endocardium and pericardium, of the muscular fibre, and of its nutrient arteries. To these may be added the diseases of the aorta, especially aneurisms of its thoracic portions.

Palpitation, or undue and often irregular action of the heart, attended by uneasy sensations of movement, is a disorder common to many organic diseases of the heart, but also frequent in debilitated states of the system, without any organic disease whatever. In exhausted and anxious men of business, in hysterical and anæmic women, in excessive habitual smokers, in dyspeptics, in persons debilitated by discharges from the mucous membranes, a degree of palpitation is quite common, and the symptom sometimes assumes the apparent form of an independent disease, especially when aggravated by mental anxiety concerning its true significance. The treatment is entirely guided by the facts of the individual case; but generally the negative results of physical diagnosis, with the positive knowledge of the cause, suffice to reassure both practitioner and patient, and lead to a correct adaptation of means to the end in view.

Syncope, or swooning, is much more commonly a functional than an organic disease: see **FAINTING**.

Angina pectoris (q.v.), or breast-pang, called also *syncope anginosa*, is a peculiar painful or oppressive sensation, very characteristic of cardiac diseases, especially of such as are apt to prove suddenly fatal. This form of disease is of great importance, and of grave significance. The two leading elements in the sensation referred to, according to Dr. Latham, are the pain and the sense of impending death. The sensation is entirely different from breathless-

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ness, though often mixed with this in the mind of the patient. Where the sudden, death-like paroxysm of angina comes on in the absence of medical assistance, the proper remedies are warmth to the extremities, stimulants, and moderate doses of laudanum or opium; but no time should be lost in procuring professional aid, as errors in the administration of these powerful remedies might be more rapidly fatal than the disease itself.

Asthma, and difficulty of breathing depending on the lungs, especially that form of difficult breathing called *orthopnoea*, when the patient is unable to lie down in bed, are symptoms very characteristic of some kinds of disease of the heart and great vessels.

The organic diseases of the heart are very numerous; most of them are attended by one or other of the symptoms above mentioned, and almost all involve more or less danger to life. It is nevertheless true that public opinion now is prone to overrate the tendency to death, and especially to sudden death, in some of these diseases. Strictly speaking, a sudden death—i.e., a death quite unexpected, and in the midst of apparent good health—is a rare and exceptional fact in organic disease of the heart; the most frequent instances being in connection with Aneurisms (q.v.) of the great vessels, fatty degeneration of the heart's fibre, and extensive calcareous degeneration of the coronary arteries of the heart, often producing marked symptoms of angina pectoris, as above referred to.

The *valvular diseases of the heart* are among the most frequent and the most easily recognizable of its organic disorders. They depend essentially upon changes in the endocardium, or internal lining membrane (endocarditis), in many cases these changes originate in attacks of rheumatic fever (see RHEUMATISM), which is therefore to be viewed with suspicion as a disease tending to shorten life, especially when developed during early youth. The valves affected are usually those of the left side, and the consequence may be either imperfect closure of the valve, leading to regurgitation of blood, or obstruction of the orifice. In either case, there is a mechanical impediment to the circulation, of a more or less serious kind; followed by dilatation of the cavities of the heart and hypertrophy of the walls, especially of the ventricles. For a time the circulation is kept up under these unfavorable conditions by increased efforts of the organ; but ultimately its balance is fatally disturbed, blood accumulates in the liver, the lungs, or others of the internal organs, and secondary diseases take place, of which Dropsy (q.v.), Albuminuria, and Hæmoptysis, or spitting of blood, are among the most frequent and formidable.

Pericarditis, or inflammation of the pericardium, i.e., the heart-purse, or fibrous sac investing the heart, is, like endocarditis, a frequent consequence of acute rheumatism. In numerous instances, it ends favorably; but in some cases it is fatal by large effusion of fluid, and in others by adhesions between the external membrane and the heart.

The treatment of all these diseases must be strictly regulated by medical advice.

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HEART. SOUNDS OF THE: two successive sounds heard on applying the ear to the cardiac region of a living man or mammal, in a state of health; each pair of sounds corresponding with one pulsation. These are known as the *first* and the *second* sound. There is scarcely any interval between these two different sounds, the second one following immediately on the conclusion of the first; but after the second sound there is a perceptible pause before the first sound is again heard. The *first* sound is dull and prolonged, while the *second* is short and sharp, and the difference between them is well expressed (as Dr. C. J. B. Williams has remarked) by articulating the syllables lubb düp.

The cause of the first of these sounds has been a subject of much discussion, at least 30 explanations of its mode of production having been offered. During the first sound, several distinct actions are taking place, to each of which it has been described by different physiologists. Thus we have (1), the impulse of the action of the apex of the heart against the side of the chest; (2), the contraction of the muscular walls of the ventricles; (3), the tension of the auriculo-ventricular (tricuspid and mitral) valves (see CIRCULATION); (4), the rush of blood through the narrowed openings of the aorta and pulmonary artery; and (5), the collision of the particles of blood with one another, and their friction against the side of the heart's cavities.

The hearts of mammals being constructed like those of man, give out sounds different in degree, but not in character, from the sounds heard in man. In birds (except the ostrich and the apterix, whose hearts approximate to the mammalian type), there is no perceptible difference between the first and second sound; and Dr. Halford has ingeniously explained why this should be in his essay on *The Action and Sounds of the Heart*. The action of the heart in reptiles (alligator, python, and turtle) seems to be accompanied with no definite sounds.

When the valves are changed by disease, the sounds undergo special alterations, which are of the highest importance in diagnosis.

HEARTH, n. *hārth* [AS. *heorth*; Ger. *herd*, floor, hearth; Dut. *haard*, the hearth of a forge: Swiss, *herd*, soil, ground]: the large flat stone placed in front of a fire-place, and generally on a level with the floor; the fireside; one's home. **HEARTH-MONEY**, a tax formerly imposed in England, on hearths and fire-places; abolished under William and Mary. **HEARTH-RUG**, n. a thick, ornamental piece of carpet-work laid on a hearth or in front of a fire-place.

HEARTILY, HEARTY, etc.: see under **HEART**.

HEART'S CONTENT: village and seaport of Newfoundland, on the s.e. side of Trinity Bay, surrounded by beautiful scenery. It has a fine harbor, and is noted as being the landing place of the Atlantic telegraph cables from Valentia, Ireland. It has overland wires to St. Johns and Cape Ray, and a well-equipped telegraph building. Pop. 880.

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HEAT, n. *hêt* [Icel. *hita*, heat, boiling; *heitr*, hot: Ger. *hitze*, heat, passion—from *hetzen*, to set on dogs, to incite: Sw. *hetsa*, to set on, to heat]: the sensation experienced on approaching or touching a hot body; hot air or weather; redness or flush of face; a form of energy usually manifested by a rise of temperature or expansion; strong excitement or agitation; ardor; fervency; in *horse-racing*, a single round of the course, constituting one completed race: see DEAD-HEAT, under DEAD; a race: a course: V. to make hot; to become warm; to warm with passion or desire; to excite. HEAT'ING, imp. (see WARMING AND VENTILATION): ADJ. stimulating; exciting. HEAT'ED, pp. HEAT'ER, n. that which warms or makes hot. HEAT-APOPLEXY, name for sunstroke (q.v.).

HEAT: unknown cause of the sensation of warmth, and of a multitude of common phenomena in nature and art. In considering this subject scientifically it is necessary, at the outset, to discard the ideas conveyed by the popular use of such words as heat and cold. A number of bodies, however different, left for a long enough time in the same room, must, as we shall see further on, acquire the same *temperature*, or become in reality equally warm. Yet in popular language, some, as metals, stones, etc., are pronounced to be cold, and others, as flannel and fur, warm. The touch, then, is *not* a means by which we can acquire a definite idea of the temperature of a body.

Nature of Heat.—A heated body is no heavier than it was before it was heated; if, therefore, heat be a material substance, as it was long considered, it must be *imponderable*. And, in fact, under the name of caloric or phlogiston, it is classed, in almost all but modern treatises, as one of the family of imponderables. But if it were *matter*, in any sense of the word, its quantity would be unchangeable by human agency. Now we find that there are cases in which heat is produced in any quantity without flame, combustion, etc., as in melting two pieces of ice by rubbing them together, and also cases in which a quantity totally disappears. This is utterly inconsistent with the idea of the materiality of heat. The only hypothesis that at all accords with the phenomena is, that *heat is a form of motion*, and with this idea we shall start.

Measure of Heat.—Whether it be a vibration, such as light and sound (in some cases, it certainly is), or consist in a succession of *impacts* of the particles of bodies on each other as (in some cases it has been considered to be), it is none the less certain that the *amount* of heat in a body is to be measured by the vis-viva (see FORCE) of moving particles. But as we cannot observe those particles so as to ascertain their vis-viva, we must have some means of measuring the temperature of a body, depending upon an *effect* of heat. Whatever that effect may be, it is obvious that, as the laws of nature are uniform, it will afford a *reproducible* standard, by which we can estimate its amount at any time and in any place, and compare that amount with another observed somewhere else; just as the French *mètre* (q.v.)

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is reproducible at any time, being the ten-millionth part of a quadrant of the meridian.

Dilatation or Expansion.—Now, the most general and notable effect which heat produces on matter is to *expand* it. The length of a metallic bar varies with every change of temperature, and is ever the same at the same temperature. The fixing of a tire of a cart-wheel is a very good instance. No hammering could fit an iron hoop so tightly on the wood-work of the wheel, as the simple enlarging of the tire by heat, and its subsequent contraction by cold. It is thus possible to *slip* it on, and an enormous force is secured to bind the pieces together. In almost every kind of structure, the expansion and contraction from changes of temperature require to be guarded against. In the huge iron tubes or beams of bridges, the mere change of the seasons would produce sufficient changes of length to tear the piers asunder, were each end of a tube fixed to masonry. Watches and clocks, when not compensated (see PENDULUM), go faster in cold weather, and slower in hot, an immediate consequence of the expansion or contraction of their balance-wheels and pendulums.

If a flask *full* of water or alcohol be dipped into hot water or held over a lamp, a portion of the liquid runs over: a glass shell which floats in a vessel of water, sinks to the bottom when the water is heated: and as water is heated, the hotter water continually rises to the surface. Indeed, if the latter were not the case, it would be impossible to prevent explosions every time we attempted to boil water or any other fluid. If a bladder, partly filled with air, and tightly tied at the neck, be heated before a fire, the contained air will expand, and the bladder will be distended. As it cools, it becomes flaccid again by degrees.

These and like instances are sufficient to show us that *in general* all bodies expand by heat. In order, then, to prepare a reproducible means of measuring temperature, all that we have to do is to fix upon a substance (mercury is commonly used) by whose changes of volume it is to be measured, and a reproducible temperature, or rather two reproducible temperatures, at which to measure the volume. Those usually selected are—that at which water freezes, or ice melts, and that at which water boils. In both of these cases, the water must be *pure*, as any addition of foreign matter in general changes the temperature at which freezing or boiling takes place. Another important circumstance is *the height of the barometer*: see BOILING. The second reproducible temperature is therefore defined as that of water boiling in an open vessel when the barometer stands at 30 inches. In absolute strictness, this should be said, also of the freezing-point, but the effect on the latter of a change of barometric pressure is practically insensible. For the practical construction of a heat-measurer, or *Thermometer* on these principles, the various ways of graduating it, and how to convert the readings of one thermometer into those of another: see THERMOMETER. In the present article, we suppose the Centigrade thermometer to be the one used.

If we make a number of thermometer tubes, fill them

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with different liquids, and graduate as in the Centigrade, we shall find that, though they all give 0° in freezing, and 100° in boiling water, no two in general agree when placed in water between those states. *Hence the rate of expansion is not generally uniform for equal increments of heat.* It has been found, however, by very delicate experiments, which cannot be more than alluded to here, that mercury expands *nearly* uniformly for equal increments of temperature. However, what we sought was not an *absolute* standard, but a *reproducible* one; and mercury, in addition to furnishing this, may be assumed to give us also the ratios of different increments of temperature.

We must next look into the nature of dilatation by heat. And first, of its *measure*. A metallic rod of length l at 0 , increases at t° by a quantity which is proportional to t and to l . Hence k being some numerical quantity, the new length $l' = l(1 + kt)$. Here k is called the coefficient of linear dilatation. For instance, a brass rod of length 1 foot at 0° becomes at t° , $(1 + 0000187t)$ feet; and here k , or the coefficient of linear dilatation for one degree (Centigrade), is 0000187; or a brass rod has its length increased by about

$\frac{1}{53,000}$ th part for each degree of temperature.

If we consider a bar (of brass, for instance) whose length, breadth, and depth are l, b, d —then, when heated, these increase proportionally. Hence,

$$\begin{aligned} l' &= l(1 + kt), \\ b' &= b(1 + kt), \\ d' &= d(1 + kt); \end{aligned}$$

therefore the volume of, or space occupied by, the bar increases from V or lbd to V' or $l'b'd'$.

Hence $V' = V(1 + kt)^3$,

$= V(1 + 3kt)$, nearly, since k is *very small*.

Therefore we may write $V' = V(1 + Kt)$, where we shall have as before K , the coefficient of *cubical* dilatation for 1° of temperature. And, as $K = 3k$, we see that, for the same substance, the *coefficient of cubical dilatation is three times that of linear dilatation*.

In the following table, these coefficients are increased a hundredfold, as it gives the proportional increase of volume for a rise of temperature from 0° to 100° Centigrade. It must also be remarked that while the *linear* dilatation of solids is given, it is the cubical dilatation of liquids and gases which is always observed. Moreover, as the latter are always measured in glass, which itself dilates, the results are only *apparent*; they are too small, and require correction for the cubical dilatation of glass. This, however, is comparatively very small, and may in general be neglected.

Glass	•00086	Water.....	•0466
Iron	•00122	Alcohol	•116
Zinc.....	•00294	Air.....	•3665
Mercury.....	•01543	Hydrogen.....	•3668

There is one remarkable exception to the law that bodies expand by heat—viz, that of water, under certain circum-

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stances. From 0° (Centigrade), at which it melts, it *contracts* as the heat is increased, up to about 4° C, after which it begins to expand like other bodies. We cannot here enter into speculations as to the cause of this very singular phenomenon, but we will say a few words about its practical utility. Water then, is *densest* or *heaviest* at 4° C. Hence, in cold weather, as the surface water of a lake cools to near 4° , it becomes heavier than the warmer water below, and sinks to the bottom. This goes on till the whole lake has the temperature 4° . As the cooling proceeds further, the water becomes *lighter*, and therefore remains on the surface till it is frozen. Did not water possess this property, a severe winter would freeze a lake *to the bottom*, and the heat of summer might be insufficient to remelt it all.

Specific Heat.—The thermometer indicates the *temperature* of a body, but gives us no direct information as to the *amount* of heat that it contains. Yet this is measurable, for we may take as our UNIT the amount of heat required to raise a pound of water from 0° to 1° , which is of course a definite standard. As an instance of the question now raised—Is *more* heat (and, if so, *how much more*) required to heat a pound of water from zero to 10° , than to heat a pound of mercury between the same limits? We find by experiment that bodies differ extensively in the amount of heat (measured in the units before mentioned) required to produce equal changes of temperature in them.

It is a result of experiment (sufficiently accurate for all ordinary purposes) that if equal weights of water at different temperatures be mixed, the temperature of the mixture will be the arithmetical mean of the original temperatures. From this it follows, with the same degree of approximation, that equal excessive amounts of heat are required to raise the same mass of water through successive degrees of temperature. As an instance, suppose one pound of water at 50° to be mixed with two pounds at 20° , the resulting temperature of the mixture is 30° ; for the pound at 50° has lost 20° , while each of the other two pounds has gained 10° . Generally, if m pounds of water at t degrees be mixed with M pounds at T degrees (the latter being the colder), and if θ be the temperature of the mixture—the number of units lost by the first is $m(t - \theta)$, since *one* is lost for *each* pound which cools by *one* degree; and that gained by the second is $M(\theta - T)$, and these must be equal. Hence $m(t - \theta) = M(\theta - T)$, whence, at once,

$$\theta = \frac{mt + MT}{m + M};$$

But if we mix water and mercury at different temperatures, the resulting temperature is found *not* to agree with the above law. Hence it appears that *to raise equal weights of different bodies through the same number of degrees of temperature, requires different amounts of heat*. And we may then define the *specific heat* of a substance as the number of units of heat required to raise the temperature of *one* pound of it by *one* degree.

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By the definition of a unit of heat, it is at once seen that the specific heat of water is unity; and, in general, the specific heats of other bodies are less, and are therefore to be expressed as proper fractions. For example, if equal weights of water and mercury be mixed, the first at 0° , the second at 100° , the resulting temperature will not be 50° (as it would have been had both bodies been water), but $3^{\circ}23$ nearly—in other words, the amount of heat which raises the temperature of 1 pound of water $3^{\circ}2$, is that which would raise that of 1 pound of mercury $96^{\circ}77$, or the specific heat of mercury is $\frac{1}{30}$ th that of water. The following may be given as instances of the great differences which experiment has shown to exist among bodies in respect of specific heat: Water, 1.000; turpentine, .426; sulphur, .203; iron, .114; mercury, .033.

It is mainly to the great specific heat of water that we are indebted for the comparatively small amount of it required to cool a hot body dropped into it; for its comparatively small loss of temperature when it is poured into a cold vessel, and for the enormous effects of the water of the ocean in modifying climate.

It has been found generally, with a few exceptions that the specific heats of bodies are nearly *inversely* as their atomic weights (q v.). Hence all atoms require the same amount of heat to produce the same change in their temperature. Thus, for simple bodies, we have atomic weight of mercury, 100; its specific heat, .033; product, 3.3; atomic weight of iron, 28; its specific heat, .114; product, 3.2. A similar remark may be made, it appears, with reference to compound bodies of the same type; but, in general, the product of the specific heat and the atomic weight differs from one type to another.

Latent Heat, Fusion, Solution, and Vaporization.—We are now prepared to consider the somewhat complex effects produced by heat on the molecular constitution of bodies; and, conversely, the relations of solidity, fluidity, etc., to heat. All bodies (except carbon, which has been *softened* only) have been melted, by the application of a proper amount of heat. The laws of this fusion are:

1. *Every body has a definite melting-point, assignable on the thermometric scale, if the pressure to which it is subjected be the same.*

2. *When a body is melting, it retains that fixed temperature, however much heat may be applied, until the last particle is melted.* The last result is most remarkable. The heat applied does not raise the temperature, but *produces the change of state*. Hence it seemed to disappear, as far as the thermometer is concerned, and was therefore called *latent* heat.

A pound of water at 79° C. added to a pound of water at 0° C., produces, of course, 2 pounds of water at $39^{\circ}5$. But, a pound of water at 79° C. added to a pound of ice at 0° C., produces 2 pounds of water at 0° . Heat, then, has *disappeared* in the production of a change from solidity to fluidity. And this we might expect from the conservation of energy (see FORCE), for actual energy in the shape of

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heat must be consumed in producing the potential energy of the molecular actions in the fluid. For every pound of ice melted, without change of temperature, 79 units of heat are thus converted into change of molecular arrangement.

We give a few instances of latent heat of fusion: Water (as above), 79·0; zinc, 28·1; sulphur, 9·4; lead, 5·4; mercury, 2·8.

In law 1, it is mentioned that constancy of pressure is necessary. In fact, the freezing (or melting) point of water is *lowered* by increase of pressure, while those of sulphur and wax are *raised*; but these effects, though extremely remarkable, are *very small*. Most bodies contract on solidifying; some, however, as water, cast iron, type-metal, etc., *expand*. Thus, a severe frost setting in after copious rain splits rocks, etc., by the expansion of freezing water; and thus also we obtain in iron the most delicate and faithful copy of a mold and in the fusible alloy a clear-cut copy of a type. The modern dynamical theory of heat enables us to see that a perpetual motion would be procurable, if bodies which contract on solidifying had *not* their melting point raised by pressure, and *vice versâ*.

Analogous to the fusion of a solid is its *solution* in a liquid, or the mutual conversion into liquids of two solids, intimately mixed in powder. Here, also, we should expect actual energy in the shape of heat, to be used up in producing the potential energy of the fluid state; and, indeed, such is always the case. Such changes of arrangement destroy heat, or produce cold; but this in many cases is not the effect observed, as heat is generally developed by the *loss* of potential energy, if there be *chemical* action between the two substances. Hence, in general, the observed effect will be the difference of the heat *generated* by chemical action, and that *absorbed* in change of state.

If a quantity of pounded nitrate of ammonia (a very soluble salt) be placed in a vessel, an equal weight of water added, and the whole stirred for a minute or two with a test-tube containing water, the heat required for the solution of the salt will be abstracted from all bodies in contact with the solution, and the water in the test-tube will be frozen. In this sense, the compound is called a *freezing mixture*. For additional illustrations of heat becoming latent, see FREEZING MIXTURES.

Of course the converse of this may be expected to hold, and latent heat to become sensible when a liquid becomes solid. As an example, when a saturated solution of sulphate of soda begins to deposit crystals of the salt, the temperature rises very considerably; and it is the disengagement of latent heat that renders the freezing of a pond a slow process, even after the whole of the water has been reduced nearly to the freezing point.

Vaporization.—Almost all that has been said on the subject of fusion is true of vaporization, with the change of a word or two. Thus, however much heat we apply to a liquid, the temperature does not rise above the boiling-point. Heat, then, becomes *latent* in the act of vaporization, or rather is *converted into* change of state. It is found

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by experiment that 540 units of heat (each sufficient to heat a pound of water 1° C.) disappear in the conversion of a pound of water into steam. Hence a pound of steam at 100° C. is sufficient to raise 5.4 pounds of water from zero to the boiling-point.

Communication of Heat.—There are at least three distinct ways in which this occurs, and these we will take in order.

Conduction.—Why is it that if one end of a poker and of a glass or wooden rod be put into a fire, we can keep hold of the other end of the latter much longer than we can of the former? The reason is, that heat is more readily transmitted in the iron from particle to particle, than it is in glass or wood. This is conduction. It is to be noticed, however, that in this experiment a great portion of the heat which passes along each rod is given off into the air by the surface. The mathematical theory of conduction has been most exquisitely investigated by Fourier, and after him by Poisson, but on the supposition that the rate at which heat passes from a warmer to a colder portion of a body is proportional to the *difference* of temperature. As most of the experiments which have been made with the object of ascertaining the *conductivity* (not conductibility, the erroneous word in common use) of different bodies have been made in this way, it is not surprising that our knowledge on this point is very meagre indeed. We know that silver conducts better than most other metals, and that the metals in general conduct better than other solids; but here our present information ends. It is satisfactory to know, however, that the defects of the old methods are now fully acknowledged, and that the important element of conductivity will shortly be accurately known for all important substances. Forbes has recently shown that the conductivity of iron diminishes as its temperature increases; and the same is probably true of other bodies. This invalidates the conclusions of the mathematical theories above mentioned, but the necessary corrections will be easily applied when the experimental data are completely determined.

In conjunction with their radiating power (see next section, the conductivity of bodies is most important as regards their suitableness as articles of clothing for hot or cold climates, or as materials for building or furnishing dwelling-houses. We need but refer to the difference between linen and woollen clothing, or to the difference (in cold weather) of sensation between a carpet and a bare floor, in order to show how essential the greater or less conducting power of bodies is to our everyday comfort.

Radiation.—By this is understood the passage of heat, not from particle to particle of one body, but through air or vacuum, and even through solid bodies (in a manner, and with a velocity quite different from those of conduction) from one body to another. There can be no doubt whatever as to radiant heat being *identical* with light, differing from red light, for instance, as red light differs from blue; i.e., having (see LIGHT) longer waves than those corresponding to red light. This idea might easily have arisen during the contemplation of a body gradually heated. At

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first, it remains dark, giving off rays only of heat; as its temperature increases, it gives us, with the heat, a low red light, which, by the increase of the temperature, is gradually accompanied by yellow, blue, etc., rays, and the incandescent body (a lime-ball, for instance) finally gives off a light as white as that of the sun, and which, therefore, contains all the colors of sun-light in their usual proportions. In fact (see FORCE), there is great reason to believe that the sun is merely a mass of incandescent melted matter, and that the radiations it emits, whether called heat or light, merely differ in *quality*, not in *kind*. Taking this view of the subject at the outset, it will be instructive to compare the properties of radiant heat with those of light throughout.

Light, then, *moves* (generally) *in straight lines*. This is easily verified in the case of heat by the use of the thermo-electric pile (q.v.) and its galvanometer. Placing the pile *out* of the line from a source of heat to an aperture in a screen, *no* effect is observed; but deflection of the needle at once occurs when the pile is placed in the line which light would have followed if substituted for the heat.

A concave mirror, which would bring rays of light proceeding from a given point to a focus at another given point, does the same with heat, the hot body being substituted for the luminous one, and the pile placed at the focus. Heat, then, is *reflected* according to the *same laws* as light. A burning lens gives a capital proof of the sun's heat and light being subject to the same laws of *refraction*. When the solar spectrum (q.v.) is formed by means of a prism of rock-salt (the reason for the choice of this material will afterward appear), the thermo-electric pile proves the existence of heat in all the colored spaces, increasing, however, down to the red end of the spectrum, and attaining its maximum *beyond* the visible light, just as if heat were (as it *must* be) light with longer waves.

Some bodies, as glass, water, etc., transmit, when in thin plates, most of the light which falls on them; others, as wood, metal, colored glass, etc., transmit none or little. A plate of rock-salt, half an inch thick, transmits 96 per cent. of the rays of heat which fall on it; while glass, even of a thickness of one tenth of an inch, transmits very little. In this sense, rock-salt is said to be *diathermanous*, while glass is said to be a *diathermanous*, or only partially diathermanous. The question, however, cannot be considered as finally settled, since some of Tyndall's results are so startling as to require further research and confirmation.

But there are other remarkable phenomena of radiant heat easily observed, which have their analogy in the case of light. 1. Unstained glass seems equally transparent to all kinds of light. Such is the case with rock-salt and heat. 2. Light which has passed through a blue glass (for instance) loses far less per cent. when it passes through a second plate of blue glass. Similarly, heat loses say 75 per cent. in passing through *one* plate of crown glass, and only 10 per cent. of the remainder (say) in passing through a second. 3. Blue light passes easily through a *blue* glass,

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which almost entirely arrests red light. So dark heat passes far less easily through glass than bright heat does. These analogies, mostly due to Melloni, are very remarkable.

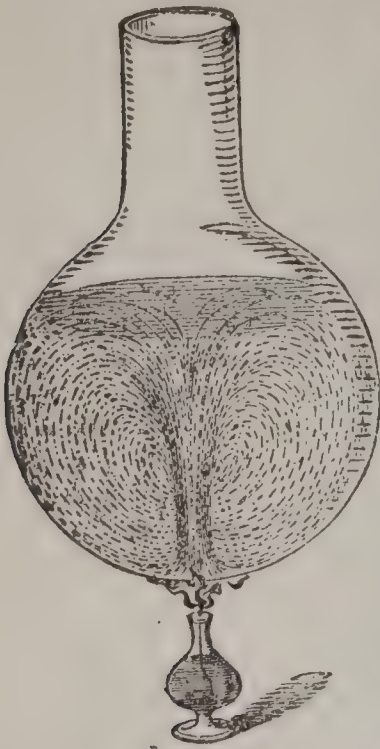
Again, light can be *doubly refracted, plane, polarized, circularly polarized*. All these properties have been found in heat by Principal Forbes (q.v.).

The beautiful investigation of Stokes and Kirchoff on the solar spectrum have shown us that bodies, which most easily *absorb* light of a particular color, when heated, give off most freely light of that color; and it is easily shown by experiment, that those surfaces which absorb heat most, readily, also radiate it most readily. Thus, it was found by Leslie, that when a tinned-iron cube full of boiling water had one side polished, another roughened, a third covered with lampblack, etc., the polished side radiated little heat, the roughened, more, while the blackened side radiated a very great quantity indeed. And again, that if we have (say) three similar thermometers, and if the bulbs be (1) gilded, (2) covered with roughened metal, (3) smoked, and all be exposed to the same radiation of heat, their sensibility will be in the order 3, 2, 1. A practical illustration of this is seen in the fact, that a *blackened* kettle is that in which water is most speedily boiled, while a polished one keeps the water longest warm when removed from the fire. Again, if a willow-pattern plate be heated white-hot in the fire, and then examined in a dark room, the pattern will be reversed—a white pattern being seen on a dark ground. This experiment of Stewart's is very remarkable, and virtually constitutes an anticipation of Kirchoff's results leading to the explanation of the fixed lines in the spectrum (q.v.). It is this law of radiation and absorption that mainly gives rise to the superior comfort of white clothing to black in winter as well as in summer; radiating less in winter, it absorbs less in summer.

Much has been argued about the separate existence of *cold*, from such fact as these: A piece of ice held before the thermo-electric pile, produces an opposite deflection of the galvanometer to that due to a hot ball. If a freezing mixture be placed at one focus of a spheroidal mirror, and a thermometer with a blackened bulb at the conjugate focus, the latter will fall speedily, though very far off from the mixture. Now, the real explanation of such observations is to be found in what is called the 'Theory of Exchanges,' first enunciated by Prevost, and since greatly extended and carefully verified by Stewart, which is to this effect: 'Every body is continually radiating heat in all directions, the amount radiated being (nearly) proportional to its own temperature.' Hence the apparent radiation of cold in the experiments above mentioned is due to the fact of the pile or thermometer *radiating off more heat than it receives*, as its temperature is higher than that of the freezing mixture to which it is opposed. From this it is evident that any number of bodies left near each other tend gradually to assume a common temperature. By this theory of exchanges, we explain the cold felt in sitting opposite a window on a frosty day, even when there is no draught.

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Convection.—A hot body cools faster in a current of air than in a still atmosphere of the same temperature, evidently because fresh supplies of the colder air are continually brought into contact with it. It is by convection mainly that heat is conveyed from particle to particle in liquids and gases. Thus, when a lamp is applied to the bottom of a vessel of water, the heat does not diffuse itself in the water as it would (by conduction) in a mass of metal, but the expansion of the heated water at the bottom rendering it lighter, bulk for bulk, than the superincumbent fluid, causes it to rise to the surface; and thus, by convection, the heat is diffused to the mass. Conduction, properly so-called, can scarcely be shown, even if it really exist, in liquids or gases, on this account. The tremulous appearance of any object, as seen by



light which passes near a hot surface, as that of a boiler or a red-hot poker, is due to the convection of heat in the air, the warm current refracting light less than the cold air. See VENTILATION.

For the mechanical applications of heat, see STEAM-ENGINE: CALORIC-ENGINE: ETC.

Sources of Heat.—They may be, so far as we know, ultimately reduced to two—chemical combination, and mechanical force; and, indeed, in all probability, the former is only a variety of the immensely different forms in which the latter is manifested. For a more full examination of this point, and a general statement of the ultimate nature of the various sources of heat, see FORCE: also COMBUSTION: FUEL.

HEATH, *n.* *hēth* [Goth. *haithi*, the open country: Icel. *heidi*, a waste: Ger. *heide*, a heath, a waste: comp. Gael. *uath*, solitary, lonely]: a small narrow-leaved flowering shrub of various species, very common on certain high lands—called in Scotland *heather* (q.v.); the common *heather* or *ling* is *Callūnā vulgāris*, ord. *Ericācēæ*; a tract of land covered with heath; an open waste tract of land. HEATHY, *a.* *hēth'i*, abounding with heath. HEATH-CKOCK, called also HEATH-POUT, a large fowl found on heaths; a species of grouse. HEATH-PEA, a species of wild vetch; a species of *Lath'yrūs*, ord. *Legūmīnōsæ*.

HEATH, *hēth* (*Erica*): genus of small shrubs of nat. ord. *Ericææ* (q.v.), distinguished by a calyx of four leaves, a bell-shaped or ovate—often ventricose—corolla, and a 4-celled, 4-valved capsule, with dissepiments from the middle of the valves. The leaves are small, linear, and evergreen. The genus, as thus defined, has been broken by some bot-

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anists into a number of genera, but the old name, *Erica*, is still commonly retained. The name H., however, is, in popular language, extended to many plants of genera nearly allied to *Erica*; and the little shrub which chiefly covers the large tracts named *moors* or *heaths* (Ger. *Huide*) in Bri-



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tain and on the continent of Europe is *Calluna vulgaris* (fig. 3). The genus *Calluna* has been separated from *Erica*, chiefly on account of differences in the capsule, and of the presence of four bracts resembling an outer calyx. *C. vulgaris*, the common LING or HEATHER, is the only species known. It is found on arid places, also in bogs. The flowers have much the appearance of being in spikes; they are of a lilac rose color, rarely white. The various depth of color in the flowers of different plants adds much to the beauty of a hill-side covered with H. in the end of August. The flowers afford abundance of honey, and bee-hives are therefore transported to the moors when the heather is in bloom. In bogs, it contributes much to the formation of peat. In some of the Hebrides, a decoction of H. is used for tanning leather. The plant is applied to various other uses in the Highlands of Scotland. Cottages are often thatched with it, and some of the poorest are mostly built of it, in layers with the roots inward, and mixed with earth and straw. Beds are also made of it, placed in a sloping direction, with the tops upward, and are said to be very soft and elastic. Besoms and scrubbing-brushes are made of it. In the island of Islay, ale is made by brewing one part of malt and two of the young tops of heather; and this is supposed to be the same beverage which was anciently used by the Picts. In Scotland, the malicious setting fire to a heath is a felony called Muirburn (q.v.): it is a felony in England also. Of the genus *Erica*, about 500 species are

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known; and these, with few exceptions, are natives of s. Africa. It has long been supposed that none are found in America, but in recent years isolated plants have been found in various parts of New England, and in regions farther north. The British Isles produce seven species, of which some have been found only in Ireland, and some in the s.w. of England. CROSS-LEAVED H. (*E. tetralix*) (fig. 2) and FINE-LEAVED H. (*E. cinerea*) (fig. 1) are common in most parts of Britain, and like most of the genus, are very beautiful when in flower. The *heather-bells* of Scottish song are the flowers of one or both of these species. A sprig of *E. cinerea* was the badge of the Macdonalds at the time when they existed as a distinct clan. *E. Mediterranea* and *E. carnea*, common in s. Europe, are very frequent ornaments of British flower-borders, hardy plants, producing their flowers in great profusion in April. Many species, remarkable for size and beauty of flowers are cultivated in green-houses; and heath-houses are sometimes erected for the purpose. Some of the s. African or Cape heaths attain in their native region a much greater size than any European H. except *E. arborea*, which in the Pyrenees sometimes grows to the height of 20 feet.

HEATH, *h êth*, WILLIAM: 1737, Mar. 7—1814, Jan 24; b. Roxbury, Mass.: soldier. He was brought up on a farm, was active in the militia before the revolution, became col. of the Suffolk regt. and commander of the Ancient and Honorable Artillery Co., of Boston, 1770; was in the general assembly 1761, 71–74; and provincial congress 1774–5; appointed brig.gen. 1774, drilled the forces at Cambridge before the battle of Bunker Hill, promoted maj.gen provincial troops 1775, June; appointed brig.gen. continental army 1775, June 22, and maj.gen. 1776, Aug. 9; opposed the evacuation of New York, commanded on the Highlands after the battle of White Plains, and commanded the posts on the Hudson from 1779 till the close of the war. He was Mass. state senator 1791–2, became judge of probate in Norfolk co., Mass., 1793, and was elected lieut.gov. 1806, but declined the office.

HEATHCOTE, *h êth'kôt*, CALEB: 1665, Mar. 6—1721, Feb. 28; b. Chesterfield, England: merchant. He settled in New York 1691; engaged successfully in mercantile business; became a royal councilor of the province 1692; led the movements which resulted in the organization of Trinity (Prot. Episc.) Church in New York, and the introduction of episcopacy in Westchester co., N. Y., and Conn.; was receiver-gen. of the province 1697, 1702; mayor of New York 1711–14; and judge of admiralty for the provinces of N. Y., N. J., and Conn., and surveyor-gen. of the customs for all the British colonies n. of Va. from 1715 till his death.

HEATHEN, n. *hê'thên* [from *heath*; Goth. *haithno*, a heathen woman: Ger. *hetde*, a heathen—from Goth. *haithi*, the open country: Dut. *heyden*, a clown, a heathen—from *heyde*, a heath—*lit.*, one who lived on the heaths or moors and not in a walled town, among whom idolatry was longer

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prevalent]: one who knows not the true God; a worshipper of idols; a pagan; a very ignorant person: **ADJ.** pertaining to; pagan; gentile. **THE HEATHEN**, idolaters. **HEA'THENIZE**, v. *-īz*, to render heathen. **HEA'THENIZING**, imp. **HEA'THENIZED**, pp. *-īzd*. **HEA'THENISH**, a. *-īsh*, rude; ignorant; of or relating to heathens. **HEA'THENISHLY**, ad. *-lī*. **HEA'THENISM**, n. *-īzm*, ignorance; rudeness; ignorance of the true God: see **HEATH**.

HEATHER, n. *hěth'ēr* [from **HEATH**, which see]: that which grows on the heath; in *Scot.*, the common name for heath. **HEATH'ERY**, a. *-ī*, abounding in heather or heath. **HEATHER-BELLS**, blossoms of a kind of heather; the Scotch bluebell, of which *harebell* may be a mere corruption: see **HAREBELL**, under **HARE**.

HEAVE, v. *hēv* [Goth. *hafjan*; Icel. *hefja*; Dut. *heffen*; AS. *hebban*; Ger. *heben*, to lift]: to raise or force from the breast, as a sigh; to lift; to throw or cast with strong effort; to cause to swell; to pant; to rise with pain; to swell and fall; to have an inclination to vomit; to raise, as an anchor: **N.** a rising or swell; exertion or effort upward; in *mining*, the displacement of a vein or bed when thrown upward by the intersection of another vein or fault. **HEAVING**, imp.: **ADJ.** throwing upward from the breast; swelling; panting: **N.** a rising or swell. **HOVE**, pt. or pp. *hōv*, or **HEAVED**, *hēvd*. **HEAVES**, n. plu. *hēvz*: see **BROKEN WIND**. **HEAVE-OFFERING**, something heaved or lifted up; among the *Jews*, a tenth of the tithes, etc., received by the Levites, which was offered by heaving or elevating. **HEAVING THE LOG**, using the log to ascertain the rate the ship is going at. **TO HEAVE TO**, to bring a ship's head to the wind and stop her motion. **TO HEAVE IN SIGHT**, to make its first appearance.—**SYN.** of 'heave, v.': to raise; lift; swell; exalt; elevate; puff; elate; throw; cast; retch.

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HEAVEN, *n.* *hëv'n* [AS. *heofon*; Icel. *hifinn* and *himinn*; Goth. *himins*; Ger. *himmel*, an arched or vaulted covering, the sky, heaven: OS. *heban*, a covering, heaven—*lit.*, a vaulted covering]: the place where the divine glory is manifested, and the abode of the blessed; great happiness; the region or expanse above us; the sky: the supreme power; God. HEAV'ENLY, *a.* *-li*, supremely excellent; god-like; celestial; pertaining to, resembling, or inhabiting heaven; delightful: AD. in a manner resembling that of heaven. HEAV'ENLINESS, *n.* state or quality of being heavenly; supreme excellence. HEAV'EN-BORN, of surpassing genius; native of heaven. HEAV'EN-BRED, grand and impressive as if produced in heaven. HEAV'ENWARD, *ad.* *-wërd*, or HEAV'ENWARDS, *ad.* *wërdz*, toward heaven. HEAVENLY-MINDED, having the thoughts and affections placed on heaven or heavenly objects. HEAVENLY-MINDEDNESS, state of having the affections placed on heavenly things. HEAVEN OF HEAVENS, the highest heaven as distinguished from the air and the firmament; according to the Jews, the dwelling-place of God and the angels.

HEAVEN: in popular Physical Science, means the expanse which surrounds the earth, and which to a spectator on the earth's surface appears as a vast arch or vault, in which are seen the sun, moon, and stars. The earliest idea entertained of this expanse was of a solid vault or hemisphere with its concavity turned downward (see FIRMA-MENT).—In Theology, the word 'heaven' may be explained to mean that portion of the infinite space in which the Lord of all things, though present throughout all, is supposed to give more immediate manifestations of His glory. Of the belief in the existence of some such special scene of the presence of the Deity, most of the known religions of the world, ancient and modern, present abundant evidence. Aristotle declares that all men, whether Greeks or barbarians, have a conception of gods; and all agree in placing the habitation of the gods in the most elevated region of the universe. Plato is equally explicit. Even Epicurus teaches the same doctrine: and one of the treatises deciphered from the papyri of Herculaneum is a treatise by him, in which the position and the other characteristics of the habits of the gods are minutely discussed. The same may be said of the Persian, the Egyptian, the German, the Scandinavian, and in general of all the ancient religions in which the belief of the existence of a supreme being assumes a form other than the pantheistic; and even in the pantheistic religions, though the philosophers may have adhered to the strict pantheistic view, and may have denied that any special locality could be regarded as the peculiar seat of the Deity, yet we find the popular belief and the popular worship even in such religions plainly founded on the contrary supposition. In addition, however, to the idea of its being the special scene of God's glory, the word H. designates also the place, or the state or condition, of the blessed spirits, and of the souls of just men admitted into the participation of the divine beatitude. In the religious system of the Greeks and Romans, none were supposed to be ad-

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mitted to the H. of the gods except the deified heroes or demigods; but with them the Elysian Fields of the lower world held, morally speaking, the place now held by H. in relation to the great doctrine of the divine retribution for the good and evil actions of human life. The Elysium of the classic mythology is in essential respects the natural equivalent of the H. of the just. The Pythagorean doctrine of metempsychosis approached nearer to it in form, for it supposed that the soul, after the purification of successive transmigrations, was elevated to a higher and incorporeal condition in the cosmos. The doctrine of Plato was still more explicit. Although skepticism was rather the rule than the exception, it may be said in general that all the philosophical systems which included the belief of the immortality of the soul, involved also at least in substance, the idea of a state of happiness as the reward of a virtuous life. The happiness, however, of the H. of these various creeds differed widely from the spiritual delights of the H. of revelation, each nation and each class forming to itself its own ideal of enjoyment. The delights of the classical Elysium were, at all events in part, delights of sense. The German warrior had his war-horse and his armor laid in his grave, that he might be able to pursue, after death, the fierce enjoyments in which he had delighted while in this world. The paradise of the Indian hunter is but a richer and more extensive hunting-ground. Still, not only these, but even the more grovelling conceptions of the paradise of other races, must be regarded as a natural manifestation of the same instinct, or as a remnant, however overlaid by error and superstition, of the same primeval revelation which is developed in the scriptural idea of heaven. Accommodating itself to the popular conceptions of the Jews, the biblical phraseology frequently implies the notion of the solid firmament already described; but the word, according to the common acceptance among Christians, is generally used simply to signify the peculiar abode of the Most High, and the special seat of His glory, in which the angels minister before Him, and the blessed spirits abide in perpetual adoration and delight. This abode of perfect bliss is believed to have been opened to the just after the passion of the Lord Jesus and his ascension into heaven. Out of the just of the old dispensation, only Enoch and Elijah are recorded to have been directly admitted to H.; the patriarchs, the prophets, and in general all the just, before the new dispensation, were detained so it has been generally believed (though only by inference from some vague utterances in Scripture) in a preparatory abode, which the Fathers call by the name *Limbus Patrum*, awaiting the final coming of the common Redeemer. The general belief of Christians has been, that since the ascension of Christ, the just who are free from sin are admitted into H. immediately after death. More than one controversy, however, has arisen on the subject; the most important of which are the Millenarian controversy (see MILLENNIUM), the Origenistic (see ORIGEN), and that on the question whether the just are admitted to the beatific vision of God immediately after death, or only after the

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general resurrection. The latter controversy arose out of the question as to the nature of the happiness of H., a discussion out of place here. It has been suggested that not all among the just are necessarily to be thought of as admitted instantly to H. at death, or on the other hand as all alike detained and waiting for some fixed future period; but that it is conceivable that each enters earlier or later according to the completion of his readiness for the heavenly state: this seems to harmonize various scriptural utterances on this subject. Such conjectures, however, cannot be held as established doctrines. The Koran adopts the Cabalistic notion of seven heavens, which arise each above the other like the stages of a building; and it places the happiness of H. in the enjoyments of sense. The Cabalistic writers, entangled in materialistic thought, divide these seven heavens according to the successive degrees of glory which they imply. The seventh is the abode of God and of the highest class of angels; the sixth, fifth, fourth, and third, are the successive abodes of the various grades of angels, arranged according to the degrees of dignity. The second is the region of the clouds, and the first the space between the clouds and the earth. One of the apocryphal books of the fifth c., *The Testament of the Twelve Patriarchs*, contains a curious exposition of the same notion. See Fabricius, *Codd. Pseudep. Vet. Test.* i. 545.

HEAVILY, HEAVINESS: see under **HEAVY**.

HEAVY, a. *hěv'î* [AS. *hefig*; Icel. *hofugr*, heavy—from Icel. *hefja*, to heave]: weighty; ponderous; laborious; dejected; depressed; dark; drowsy; not light or spongy; large; abundant; indigestible; dull or tedious, as a speech or discourse; soft or miry, as heavy land; loud, as heavy firing: AD. common as the first element of a compound; heavily, as in *heavy-laden*, *heavy-hearted*. **HEAV'ILY**, ad. -*lî*. **HEAVINESS**, n. quality of being heavy; weight. **HEAVY-SPAR**, a mineral, the name given to sulphate of baryta in consequence of its great specific gravity.—**SYN.** of 'heavy, a.': sorrowful; slow; grievous; oppressive; afflictive; dull; torpid; indolent; lazy; stupid; foolish; troublesome; tedious; burthensome; loaded; encumbered; thick; cloudy; gloomy; dark; pregnant; cumbersome; leaden; burdened; sluggish; dilatory; inactive; lifeless; inanimate; strong; violent; forcible; low; deep; clammy; solid; cloggy; clayey.

HEBBEL, *hěb'bl*, **FRIEDRICH**: lyrical and dramatic poet of Germany: 1813, Mar. 18—1863; b. Wesselburen, in Ditmarsh, duchy of Holstein, Denmark. He studied at Heidelberg and Munich; and after travelling in France and Italy, settled at Vienna, where he married the actress Christine Enghaus 1846. His principal works are *Gedichte* (2 vols. Hamb. 1842; Leip. 1848), remarkable for melody and beauty; and several dramas. H. had rich imagination, great power of thought, and an energetic and original style, but too great predilection for the horrible and the exaggerated. His collected works appeared 1855-68.—See **Biography by Kuh** (1877).

HEBDOMADAL—HEB

HEBDOMADAL, a. *hěb-dŏm'ă-dăl* [Gr. *hebdomās*, the space of seven days—from *hepta*, seven: *hebdomādă*, a week]: weekly; consisting of seven days, or occurring every seven days; also in same sense, **HEB'DOMAT'ICAL**, a. -*ĭ-kăl*. **HEBDOM'ADARY**, n. -*der-ĭ*, in a *convent*, an inmate officiating in turn for a week: **ADJ.** weekly. **HEBDOMADAL COUNCIL**, part of the governing body at Oxford.

HEBE, n. *hěbē* [Gr. *Hebē*]: in the *anc. myth.*, the goddess of youth; daughter of Zeus and Here—according to others, of Here alone—was the wife of Hercules after he had been deified. She was the cupbearer in Olympus, before Zeus conferred that office upon Ganymede (q.v.); but she always retained the power of restoring the aged to the bloom of youth and beauty. According to Apollodorus, she became mother of two sons by Hercules—Alexiars and Aniketos; but in Homer she appears always as a virgin. In Athens, altars were erected to her conjointly with Hercules. In Rome, she was worshipped under the name *Juventas*, and a temple in her honor stood on the Capitoline Hill at the time of Servius Tullius. Statues of H. are extremely rare; she is to be recognized only by the drinking-cup.—*Hebe*, in astron., is the name of one of the planetoids.

HEBEN, n. *hěb'ĕn*: in *OE.*, for **EBONY**, which see.

HEBENON, n. *hěb'ĕ-nŏn*: in *OE.*, a supposed corruption of *heben*, or ebony, whose juice was considered poisonous; also said to be *henbane*, or the poisonous crude oil of tobacco.

HEBER, *hě'bēr*. **REGINALD**: second Bishop of Calcutta, and an English poet: 1783, Apr. 21—1826, Apr. 3; b. Malpas, Cheshire. In 1800, he entered at Brasenose College, Oxford; and three years later produced his prize-poem *Palestine*, the only prize-poem perhaps which holds a place in English literature. In 1804, he became a fellow of All Souls. In 1807, he was inducted into the family-living at Hodnet, and entered upon his parochial duties with great zeal. He was a frequent contributor to the *Quarterly Review*, his political views being those of a tory and high churchman. He held to the doctrine of apostolical succession, yet was of a liberal Christian spirit. In 1812, he published a volume of *Hymns*. He was appointed Bampton lecturer 1815, and two years afterward he received a stall in St. Asaph Cathedral. He edited the works of Jeremy Taylor 1819, and was elected preacher of Lincoln's Inn 1822. Shortly afterward, the vacant see of Calcutta was offered to him, and after much hesitation on account of his wife and child, it was accepted, and he embarked for India 1823, June 16. He entered on his duties with exemplary zeal; and 1824, June, he began the visitation of his diocese. He spent about 11 months visiting stations in Upper Bengal and the north of Bombay. 1825, Apr.—Aug., he remained at Bombay, and sailed thence to Calcutta, where he arrived Oct. 21. In 1826, Feb., he proceeded to Madras on a visit to the southern province. He reached Trichinopoly Apr. 1, and on the 3d, after con-

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firming 15 natives, he entered a cold bath, in which, half an hour afterward, he was found dead. The journal which he kept during his tour of visitation was originally published in three octavo vols., and afterward reprinted in two vols. in Murray's *Home and Colonial Library*. His life was published by his widow, two vols. (Lond. 1830). As a poet, his fame rests upon *Palestine* and his *Hymns* (new edit., Murray 1869). They have not great originality or depth, but they are pleasingly versified, and illuminated by graceful fancy. He is remembered for his hymns, such as, *Brightest and best of the sons of the morning*, *By cool Siloam's shady rill*, *Lo! He comes in clouds descending*, *Jesus Christ is risen to-day*, *Holy, Holy, Holy, Lord God Almighty*, *From Greenland's icy mountains*. As the most learned and zealous of Indian bishops, he is enshrined in the affections of the Christian world.—RICHARD H., half-brother of Reginald H., 1773–1833, b. Westminster, was a famous bibliomaniac. Having succeeded to large estates by the death of his father 1804, he was enabled to indulge his elegant hobby to the utmost. Dr. Dibdin estimated his collection in England at 105,000 vols., in addition to which he possessed many thousand of books on the continent, the whole having cost him £180,000.

HÉBERT, *ā-bār'*, JACQUES RENE; commonly known as *Père Duchesne*: 1755–1794, Mar. 24; b. Alençon: one of the most profligate characters of the French Revolution. At an early age, he went to Paris, and became a servant in one of the small theatres, but was dismissed for embezzling money. He then entered the service of a physician, but was soon dismissed for the same fault. At the commencement of the Revolution, a person of the name of Lemaire, under the title of *Le Père Duchesne*, published a small popular paper for the diffusion of constitutional principles among the people. The success of this paper induced the Jacobins to establish another of the same name, and H. was appointed editor; and knowing the tastes of the class of people that he addressed, he displayed such an exaggeration of principles and cynicism of language as ruined the enterprise of his honest rival. In consequence of the events of Aug. 10, he became a member of the revolutionary council, and was conspicuous in the horrors of September. He and his associates called Hébertists or *Enragés*, were likewise mainly instrumental in converting the church of Notre Dame into a temple of the goddess 'Reason,' whose worship he invented. He was at length compelled to give way before the faction of Robespierre, and perished on the scaffold.

HEBETE, a. *hěb'ět* [L. *hěbēs*, or *hěbētem*, dull, blunt: F. *hébété*, stupid]: in *OE.*, dull; stupid; doltish: N. a dull, sluggish, obtuse person. HEBETUDE, n. *hěb'ě-tūd*, dulness; stupidity; obtuseness.

HEBREW—HEBREWS.

HEBREW, n. *hē'bró* [L. *Hebræus*; Gr. *Hebraios*; F. *Hébreu*, of or belonging to the Hebrews, Hebrew—supposed to be derived from *Eber* or *Heber*, great grandson of Shem, and an ancestor of Abraham; or, derived from *Abraham*, who may have been so called after he crossed the Euphrates—from Heb. *'abar*, he crossed over—see *Skeat*]: a descendant of Eber or Heber—particularly of Jacob; a Jew; an Israelite; the language of the Jews. **ADJ.** of or pertaining to Hebrews or Jews. **HEBRAIC**, a. *hē-brā'ík*, of or relating to the Hebrews or the language. **HEBRA'ICALLY**, ad. *-kāl-lī*, after the manner of the Hebrew language. **HEBRAICIZE**, v. *hē-brā'ī-sīz*, to make or convert into Hebrew. **HEBRA'ICIZING**, imp. **HEBRA'ICIZED**, pp. *ī-sīzd*. **HEBRAIZE**, v. *hē-brā-īz*, same sense as *hebraicise*. **HE'BRAI'ZING**, imp. *-ī'zīng*. **HE'BRAIZED**, pp. *-īzd*. **HEBRAISM**, n. *-īzm*, Hebrew idiom; an expression or manner of speaking peculiar to the Hebrew language. **HE'BRAIST**, n. *-īst*, one versed in Hebrew. **HE'BRAIS'TIC**, a. *-tīk*, pertaining to or resembling Hebrew.—*Hebrews* is the distinctive name of that branch of the Semitic family which migrated from Mesopotamia into Palestine, thence went to Egypt, and, after a long period of bondage, reconquered Palestine, and finally settled there. Divided, at a later period, into two distinct states, that of Judah and of Israel, they were singly overcome, and led into exile. A portion, chiefly descendants of Judah (Jehudah), returned, and founded a new empire. From time forward, all the members of the Mosaic commonwealth were known by the name of Jehudim, corrupted into Jews. For a continuous sketch of their entire history from the days of Abraham to our own, as well as a brief outline of their language and literature, see **JEWS**.

HEBREWS, EPISTLE TO THE: one of the Epistles of the New Testament. Much discussion has arisen both as to its *canonicity* and as to its *authorship*, the absence of the customary superscription rendering it impossible to attain certainty in regard to the latter, and tending to throw doubt on the former also. In reference to the first and more important of these points, the canonicity, the case stands as follows: The earliest post-apostolic writer, Clemens Romanus, quotes from it in the same way as from the other books admittedly canonical. Justin Martyr, Pinytus (?), the Cretan bishop, the predecessors of Clemens Alexandrinus and Origen, and the framers of the Peshito version of the New Testament, accept it as authoritative; while the Gnostic heretics, Basilides and Marcion, are spoken of as distinctly rejecting it. No disbelief of its canonicity is expressed by any section of the orthodox church until after the middle of the 2d c.—though many writers are silent altogether about it—after which period, for the next two centuries, the Roman and n. African churches reject its authority. Tertullian speaks of it as a good sort of apocryphal book; Cyprian does not include it in Paul's epistles; Irenæus, even while defending the divinity of Christ, declines to strengthen his argument, which he could very effectively have done, by borrowing armor

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from its stores; while the Muratorian Fragment on the Canon, Caius, Hippolytus, and Victorinus of Pannonia, also leave it out of the Pauline epistles. During the 4th c., however, its authority began to revive, and it was received by Hilary of Poitiers, Ambrose of Milan, and later by Jerome, who, though frequently too hasty in his conclusions, was certainly the most learned and accomplished of the Latin Fathers. The immense authority of Augustine was thrown into the same scale; others soon followed, and in 416, a decretal of Pope Innocent III. placed its canonicity beyond cavil. In modern times, Cardinal Cajetan, opponent of Luther, reopened the ancient controversy. He rejected the authority of the epistle. The great reformer did the same, affirming that it was the work of some disciple of Paul's, who had not been thoroughly grounded in his master's teaching, and had built his own 'wood, hay, and stubble,' upon the apostle's 'gold, silver, and precious stones.' This opinion, however, met with small approval, and has never been adopted by any Protestant church.—*Authorship.* This is unknown, but was commonly ascribed to the apostle Paul. This appears to have been the opinion of the Eastern church from the first; but the Alexandrian Fathers—most critical and scholarly of the early Christian theologians—struck with the entire dissimilarity of style, phraseology, and mode of thought which it presents to the Pauline epistles, and which is abundantly manifest even in the English version, sought to fix its authorship on some other person, Luke being the favorite. Tertullian, again, states that, according to the traditional belief of the N. African school, Barnabas was the author. The Roman Church, down to the middle of the 4th c., contented itself with a negative position, denying its Pauline authorship. The opinion of the Alexandrian school may be said to have prevailed, viz., that though Pauline in essence, the epistle was not Pauline in form. Thus the matter remained till the time of Luther, who suggested Apollos as the likeliest author. Since then, the great majority of scholars, including many of the orthodox, have denied the Pauline authorship.

Who were the 'Hebrews' to whom the epistle was sent, is also a matter of doubt; but the probability is very strongly on the side of the church at Jerusalem, composed of those who were 'Hebrews of the Hebrews.' The date of the epistle can only be inferred from its contents. It has long been held that its date must have been *before* the destruction of Jerusalem (A.D. 70), because the overthrow of the temple is not alluded to, which would have been one of the strongest links in the chain of argument to prove the temporary nature of the old national faith. This inference is no longer regarded as certain: the Rabbinical writings furnish parallel instances in which such an inference is plainly inadmissible; and recent scholars are not insisting on so early a date for the epistle.

The purpose of the writer of the epistle is apparently to encourage the Jewish Christians of Jerusalem—perhaps of all Palestine—to persevere in the confession of their Christian

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faith, against the constant temptation to return to their hallowed ancestral Judaism. The writer opens the whole question of Judaism *versus* Christianity; exhibits the contrast between the two with sharp analysis, strips the former of all its accidental and superstitious attractions, and shows that what is really deep and valuable in it is its *prophetic* character; it is but the shadow of a 'better hope,' viz., 'the hope of the Gospel;' and the great fathers and heroes of Judaism from, Abel downward, illustrate the truth of this, for 'these all died in faith, not having received the promises, but having seen them afar off.' Yet so vital and strong had been the faith of the fathers, that it may almost be said to have put them in spiritual possession of the realities to which they looked forward, for 'faith is the *substance* of things hoped for, the *evidence* of things not seen.' Thus they were 'Christians before Christianity,' and now that the things which they hoped for had come, the Jewish believers ought not to be grieved at parting with the old national worship, however dear, for the new worship really embraced the substance of the old, and thus bestowed upon it its own immortality. The style of the epistle in several passages is richly rhetorical.

HEBRIDES.

HEBRIDES, *hēb'ri-dēz*: in a general sense all the islands on the w. coast of Scotland. They have been variously classified; but the most natural division seems to be into the Outer and Inner H. To the Outer belong Lewis, with Harris, North Uist, Benbecula, South Uist, Barra, Coll, and Tiree. The remote isle of St. Kilda might be associated with this external series. The principal of the inner islands are Skye, Eigg, Mull, Iona, Staffa, Ulva, Lismore, Kerrera, Easdale, Colonsay, Jura, and Islay. Bute, the Combraes, and Arran, though in the Firth of Clyde, are usually classed with the H. The whole are popularly spoken of as the Western Isles, the term H. being confined chiefly to literature. The total number of the H. is about 490 (which number includes every islet that affords sufficient pasturage to support one sheep); of these not more than 120 are inhabited. The entire area is not accurately known, but is estimated at more than 3,000 sq. m. Only about 200,000 acres are arable, the rest is in pasture-land of little value, and in morasses, peat-mosses, lakes, and barren sands and rocks. Pop., which is not increasing (1881), abt. 100,000.

The scenery of Skye is grand and picturesque; Mull is noted for lofty mountains, Jura for its peaks, and Arran for high rugged hills. Islay and Bute are comparatively level and arable. Staffa is remarkable for its basaltic columns and great cavern. Iona is interesting from its ruins and historical associations. Politically, all the Hebridean isles are attached to Scotland, in whose civil and ecclesiastical systems they participate. The counties among which they are distributed are Ross, Inverness, Argyle, and Bute. The principal Hebridean towns are Stornoway in Lewis, Portree in Skye, Tobermory in Mull, and Rothesay in Bute. Oban, though on the main-land of Argyle, is usually considered a town of the H., and with Rothesay, is best known to tourists.

Through the influence of the Gulf Stream (q. v.), the climate of the H. is peculiarly mild. Snow seldom lies long on the sea-shores or low grounds, and in sheltered spots, tender plants are not nipped by winter frosts. But, though genial, the climate is humid. Drizzling rains are frequent, and mists often envelop the islands, or at least shroud the higher mountains from sight. With these drawbacks, the climate is pleasant and healthful, and is recommended for certain classes of invalids. The humbler classes of natives, partaking of the old Celtic character, for the most part speak Gaelic, but latterly, through educational efforts and otherwise, English has made extensive progress. As in the main-laid portion of the Highlands, many large estates have passed from old families of note into the hands of opulent modern proprietors, who have made extensive improvements. The greatest improvement of all, however, was the work of a Glasgow firm, David Hutcheson & Co., by whom was established an extraordinary system of steam-navigation in connection with the H., calculated to develop the resources of the islands, and bring them, with the neighboring coast, within the sphere of trade and the reach

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of tourists. As opening remote tracts formerly reached only with extreme difficulty, the system of Hebridean steamers may be said to be gradually altering the character of, and giving a new value to, the Western Highlands and Islands. The recent opening of a railway from Dingwall to Strome Ferry, opposite Skye, and of the line from Callander to Oban, 1880, has further greatly increased the accessibility of these regions.

The H. are the *Ebude* of Ptolemy, the *Hebudes* (of which the name H. is merely a corruption, said to be the consequence of a misprint in a Parisian printing-office) of Pliny, and the *Sudreyyjar* (Southern Islands, as distinguished from *Orkneyjar*, Northern Islands) of the Norwegians. The latter epithet was Latinized into *Sodorenses*, and is still retained in the title 'Bishop of Sodor and Man.' The history of these islands forms an interesting episode in that of Scotland. According to the general account, the H. were colonized first in the beginning of the 9th c. by emigrants from Norway, who had fled from the iron rule of Harald Haarfager (863—936); they naturally settled in the greatest numbers on the first land that was reached, viz., the Shetland and Orkney Isles and Outer Hebrides; but some wandered as far s. as the Isle of Man, colonizing as they went. The consequence was the total absorption of the Celtic into the Norse element in the northern islands, while southward the Celtic element asserted the predominance. This colony after a time threw off swarms, which settled on the n. and w. coasts of Scotland, Cumberland, and Westmoreland, and in all probability founded the Norwegian kingdoms of Dublin, Waterford, and Limerick; it also sent a colony to Iceland 874. At last the settlers became so powerful as to be a source of annoyance to the mother-country, whereupon Harald Haarfager, about 870, fitted out a great expedition, and subdued the H. and Man. They remained subject to Norway till 1266, three years after the battle of Largs, and were then transferred to Scotland. In 1346, one of the chiefs, named Macdonald, reduced the whole under his authority, and took the title 'Lord of the Isles;' but 1540 they were finally annexed to the Scottish crown by James V. The H. were ecclesiastically dependent on Norway as late as 1374, and Prof. Munch argues that this relation lasted till 1472, when St. Andrews was made the seat of a metropolitan. The influx of the Norsemen has had here, as elsewhere, great influence over the nomenclature; many places and islands having lost their original Celtic designations.

There are numerous works on the Hebrides, many by well-qualified observers. The more notable are Martin's *Description*; Pennant's *Tour*; Dr. Johnson's *Journey to the Western Islands*, and Boswell's account of the same tour; Gregory's *History*; Macculloch's *Description* (1819); and Buchanan's *Hebrid Isles* (1883). For the ancient history see Munch's *Chronica Regum Manniæ et Insularum*; for the social condition of the tillers of the soil, and the relations to the landlords, see Report of the Crofters Commission, 1884. Scott's *Lord of the Isles* raised a popular inter

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est in these islands, and they are now largely visited by tourists in summer time. For the more important islands, see the separate titles.

HEB'RIDES, *NEW*: see *NEW HEBRIDES*.

HEBRIDIAN, *a. hēb-rīd'ī-ăn*: pertaining to the *HEBRIDES*, *hēb'rī-dēz*, a group of islands on the west coast of Scotland: *N.* an inhabitant of.

HEBRON, *hē'bron*: one of the oldest cities in Palestine; belonging to the tribe of Judah, 21 m. s.s.w. of Jerusalem; may even be regarded as one of the oldest in the world, for it was in existence in the time of Abraham, nearly 2,000 years before Christ; 'built seven years before Zoan (Tanis) in Egypt' (Num. xiii. 22). *H.* was anciently called Kirjatharba, i.e., city of Arba, from the progenitor of the *Anakim* (q.v.); at a later period, it was the residence of King David, before he conquered Jerusalem; its subsequent history is unimportant.—The modern town is a poor place, inhabited by some 10,000 people, of whom about 50 families are Jews. It lies low in a narrow and picturesque valley—the valley of Eschol, famous now, as of old, for its thick clustering grapes, its olives, and other fruits. The church erected by Empress Helena, mother of Constantine, on the spot where Abraham is said to have been buried, has been converted into a mosque called *El Haram*. The alleged tombs of the patriarch and of several members of his family are still shown. They all are richly hung with palls of green or red silk, which are renewed from time to time; but it is believed that the real tombs are in a 'cave' below the building. The modern name of the town is *El-Khulil* ('the friend,' i.e., of God), in allusion to Abraham. About a mile from *H.*, rising solitarily in the midst of vineyards, beside a well of pure water, is one of the largest oak-trees in Palestine, 23 ft. girth, with foliage covering a space about 90 ft. in diameter. Some say that this is the very tree beneath which Abraham pitched his tent; but this notion is untenable, for the tree itself gives no evidence of such antiquity; besides, Jerome speaks of Abraham's oak having disappeared about the time of Constantine.

HE'BRUS: see *MARITZA*.

HECATÆUS, *hēk-a-tē'ūs*: famous historian and geographer: probably abt. B.C. 550—B.C. 476 (though the dates are uncertain); son of Hegesander. He belonged to an ancient and wealthy family of Miletus, and was enabled to gratify his natural passion for knowledge and travel. He seems to have visited Greece, Thrace, the countries bordering on the Euxine, and many provinces of the Persian empire, with parts of Italy, Spain, and Africa. The results of his foreign travels and of his private studies were embodied in two great works—*Tour of the World* and *Histories* or *Genealogies*. His geographical work was into two great portions, one treating of Europe, the other of Asia, Egypt, and Libya. He improved the map of the world which had been made by Anaximander. His *Histories* was little more than a prose version of the poetical legends of the Greeks—

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about Deucalion and his descendants—Heracles and the Heraclidæ—the Peloponnesian traditions—and those of Asia. Herodotus seems to have set considerable value on the writings of Hecataeus. The fragments of the works of H. have been edited by Creuzer, Klausen, and others.

The most interesting part of the life of H. is that which succeeded his travels. In the revolt of the Ionians against Persia, his extensive knowledge of the Persian empire and its resources enabled him to give sound advice to Aristagoras, leader of the insurrection, which, however, was rejected. He dissuaded his countrymen from an attempt so far above their means; when that counsel was despised, he urged the formation of a fleet, but without effect. After defeat had humbled the Ionians, and Aristagoras with others, contemplated flight to Sardinia, he urged them (though in vain) to fortify the island of Leros and wait there the course of events. He afterward went as ambassador to the Persian satrap Artaphernes, and induced him to treat the Ionians with leniency.

HECATE, *hĕk'ă-tē*: ancient Thracian goddess, afterward adopted into the Greek Pantheon; mentioned first by Hesiod, who calls her the daughter of the Titan Perses, and Asteria, or Night. She was the only one of the Titans, under the rule of Zena, who retained her former power. H. was in some sense a triple deity, ruling in heaven, earth, and the infernal (or lower world—Phœbe or the Moon in heaven, Diana on the earth, and H. or Proserpine in hades. She appears on some occasions as the bestower of wealth, victory, wisdom, good-luck to sailors and hunters, and prosperity to youth, but able also to withhold these blessings. In connection with Persephone; she is described as a powerful infernal and cruel deity, who has all the magic powers of heaven, earth, and sea at her command. Particular honors were paid to her in Bœotia, at Ægina, and even in the Eleusinian mysteries. She played an important part in the mysteries of the Cabiri, celebrated principally at Samothrace and Lemnos. Her sanctuary in Samothrace was the Zerynthian Cave, and wherever she was worshipped with the Cabiri, her temple was placed near a cave. As the bestower of good and averter of evil, her image was placed before the houses of persons of rank, in places of popular assembly, and at crossways, where at every new moon offerings of food were presented to her, which were consumed by poor people. As an infernal goddess, she appears in a hideous form. Serpents issue from her feet, serpents are twined in her hair, she bears a lighted torch and a sword in her hand, and two black shaggy dogs are her attendants; and sometimes she is represented with three heads, viz., those of a horse, a lion, and a dog. In this last form, she appears at the crossways. Another important feature, which arose from the notion of her being an infernal divinity, was the belief in her being a spectral being, who at night sent from the lower world all kinds of demons and terrible phantoms, who taught sorcery and witchcraft, and dwelt at cross-roads, tombs, and near places where murder had been committed.

HECATOMB—HECKER.

HECATOMB, n. *hěk'ă-tôm* [Gr. *hekatōmbē*—from *heka-ton*, a hundred; *bous*, an ox; F. *hécatombe*: L. *hecatom'bē*]: in the worship of the Greeks, and in other ancient religions, a sacrifice of a large number of victims, properly, though not necessarily, one hundred. Originally, it seems that the practice was to burn the entire victim; but even as early as the time of Homer, it was usual to burn only the legs wrapped up in the fat and certain parts of the intestines: the rest of the victim was consumed at the festive meal which succeeded the sacrifice. Not only were the gods believed to be propitiated in proportion to the number of victims, but the increase of the number was gratifying also to the priests and servants of the temple, and to the public who were admitted to the sacrificial banquet. Hence in Athens the H. was a most popular form of sacrifice (Athenæus, i. p. 3). On the contrary, the thrifty Spartans limited the number both of the victims and of the sacrifices; and while the other Greek states required that the victim should be of the most perfect kind, the Spartans were content with animals of inferior character. In the H. strictly so-called, the sacrifice was supposed to consist of one hundred bulls; but other animals were frequently substituted. Figuratively, H. means any destruction or sacrifice of a large number of victims.

HECK, n. *hěk*, or **HACK**, n. *hăk* [Dut. *heck*, a grating; Sw. *hack*, a hedge of branches]: an instrument for catching fish; a bend in a stream; a rack for holding fodder: see **HECKLE**. **HECK AND MANGER** [*heck*, the rack: *manger*, the feeding-trough]: in *Scot.*, to live comfortably at free quarters; to live in plenty and luxury without regard to consequences.

HECK, *hěk*, **BARBARA**: prob. abt. 1734–1804; b. Ballingarry, Ireland; of a German family that had settled in that region: a founder of American Methodism. She married Paul H., was converted to Methodism by Wesley's preaching, accompanied Philip Embury to New York 1760, gathered a congregation, and stimulated Embury and his associates to build the John street meeting-house. When Wesley took charge of the chapel she went with Embury to Salem, N. Y., and founded the first Meth. soc. in n. N. Y., and subsequently founded the first soc. in Canada, near Augusta, where she died.

HECKER, *hěk'ker*, **FRIEDRICH KARL FRANZ**: 1811, Sep. 28—1881, Mar. 24; b. Eichersheim, Baden: leader of the democratic party in the German revolution of 1848. After studying law in Heidelberg, became 1838 advocate of the supreme court in Mannheim. Though rising to eminence as a pleader, when elected 1842 a member of the second chamber in Baden, he abandoned his profession for political life, and soon grew popular among the more advanced of the opposition. In 1846 he began to side actively with the purely democratic and socialistic party outside of the chamber, and on the revolution breaking out 1848, immediately began to employ his eloquence in revolutionary agitation. When the preliminary convention (*Das Vorparlament*) met,

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he endeavored, with the influence of his whole party, to constitute it into a permanent republican assembly. The frustration of this effort led him to think of surprising the smaller governments of s. Germany with the artisan bands which had been sent to the Rhine. Defeated at Kandern, 1849, Apr. 20, he fled into the canton of Basel, where he conducted a newspaper against the constitutional party. On being refused admission into the parliament, though elected, he emigrated to America, and bought a farm near Belleville, Illinois. He commanded a brigade on the Federal side in the civil war, and died at St. Louis.

HECKER, *hěk'ēr*, ISAAC THOMAS: 1819, Dec. 18—1888, Dec. 22; b. New York: founder of the Rom. Cath. congregation of Paulists. He was engaged some years in the flour business with his brothers, joined the Brook Farm community 1843, became a student of Kant and Fourier, spent some time with the Fruitlands community and with Henry D. Thoreau in his 'hermitage,' became a Rom. Cath. 1845, joined the Redemptorist order in Belgium 1847, was ordained priest by Cardinal Wiseman, London, 1851; released from the Redemptorists by the pope 1857, and founded the congregation of St. Paul the Apostle in New York 1858. The object of the new order was to provide one more in harmony than the older ones with the spirit of American progress and institutions; and nearly all its members are native Americans and converts from Protestantism. He founded also the Catholic Publication Soc., and the *Catholic World*. His most important publications are *Catholicity in the United States* (1879), and *Catholics and Protestants Agreeing on the School Question* (1881).

HECKEWELDER, *hěk'eh-wěl-dēr*, JOHN GOTTLIEB ERNEST: 1743, Mar. 12—1823, Jan. 21: b. Bedford, England: missionary. He removed with his parents to America 1754, was a missionary to the Indians in O., Penn., and Mich. 1762-77; was appointed missionary agent for the Moravians 1788, served several times as U. S. peace commissioner to the Indians, became an assoc. judge of the O. court of common pleas, published numerous works on Indian archeology, history, languages, and customs, and was a member of the American Philosophical Society.

HECKLE, n. *hěk'l* [see HACKLE: Dan. *hegle*, a heckle—from *hage*, a hook: Sw. *hackla*—from *hake*, a hook]: instrument for preparing flax.—*Heckles*, or *Hackles* (and *Gills*, smaller and finer Heckles), are very important parts of various machines for preparation of animal and vegetable fibres for spinning. They consist of a series of long metallic teeth, through which the material is drawn, so that the fibres may be combed out straight, and so fitted for the subsequent operations. The manufacture of these machines, involves great care and nicety, as any imperfection may cause serious loss, by damaging the fibre which passes through them. For flax, hemp, jute, and similar large and coarse fibres, the teeth of the heckles are large, about eight inches long, of steel wire one-fourth of an inch in diameter. This is gradually reduced from the base upward until it ends in a

HECKMONDWIKE—HECTARE.

fine point: the whole is beautifully polished, to prevent injurious friction. They are fixed in a wooden or metallic base, in several rows, alternating with each other at short distances apart, in heckles; but in gills the teeth are much finer, resembling needles, and fewer in number, usually in two rows, constitute a part of the spinning-machinery. The manufacturers of these articles are called Heck-makers. HACKLE, *v.* in *Scot.*, to ask searching and troublesome questions, as at a candidate for municipal or parliamentary honors. HECKLING, *n.* *hĕk'ling*, act or process of preparing flax; in *Scot.*, a rough off-handed way of questioning a candidate for a seat in parliament as to his views and political principles; in *OE.*, busy interference. HECKLED, *pp.* *hĕk'ld*.

HECKMONDWIKE, *hĕk'mond-wĭk*: thriving manufacturing village of England, in the West Riding of Yorkshire, on the Lancashire and Yorkshire railway, three m. n.w. of Dewsbury, ten m. s.w. of Leeds. It is the chief seat of the carpet and blanket trades in the West Riding. Pop. (1871), 8,300; (1881) 9,286.

HECLA, or HEKLA, *hĕk'la*: isolated volcanic mountain in Iceland, of conical shape, about 20 m. from the s.w. coast. Its snow-clad summit is 5,110 ft. high. The principal crater, when visited by Sir George Mackenzie, was about 100 ft. deep, and contained much snow in the bottom. There are many small secondary craters near the summit. The sides of the mountain are broken by numerous deep ravines, forming channels for mountain torrents produced by the melting of the snow. The principal rocks are lava and basalt, covered with the loose stones, scoriæ, and ashes ejected from the volcano. The view from the summit is very desolate and wild. 'Fantastic groups of hills, craters, and lava, leading the eye to distant snow-covered jokuls; the mist rising from a waterfall; lakes embosomed amid bare bleak mountains; an awful and profound slumber; lowering clouds; marks all around of the furious action of the most destructive of the elements, give to the region a character of desolation scarcely to be paralleled.'

A record of the eruptions has been kept since the 10th c. They are few in number, only 43, but they have been always very violent, and generally continuing for a considerable time. One of the most tremendous occurred 1783, when the immense quantity of lava and ashes ejected laid waste a large extent of country. The internal fire remained quiescent as if exhausted, till 1845, Sep., when with terrific energy it again burst forth, and continued active for more than a year. At this time, it poured out a torrent of lava, which at the distance of two m. from the crater was one m. wide, and 40 to 50 ft. deep. A fine dust from this eruption was scattered over the Orkney Islands, 400 m. from Hecla.

HECTARE, *n.* *hĕk-târ'* [*F.*—from Gr. *hĕkâtôn*, a hundred: *F. are*, a superficial unit—from L. *ārĕă*, any void place]: French measure containing 100 French *ares*, or two and a half Eng. imperial acres nearly: see ARE; METRIC SYSTEM.

HECTIC—HECTOR.

HECTIC, a. *hěk'tík* [Gr. *hektikós*, pertaining to habit of body—from *hexis*, habit of body: F. *hectique*, sick of a continual fever: mid. L. *hecticus*]: constitutional; habitual; troubled with a flushed face, the result of unnatural heat; affected with fevers called *hectic*; also **HECTICAL**, a. *-tĩ-kál*. **HECTICALLY**, ad. *-lĩ*. **HECTIC**, or **HECTIC FEVER**, n. a peculiar remitting fever attended with alternate chill and heat: usually found associated with organic disease of the chest or abdomen, and above all with tubercular disease, or consumption (q.v.: see also **FEVER**). It can scarcely be called an independent form of disease, though carefully described as such by most of the older authors, and distinguished as a fever with morning and evening paroxysms, and intermediate remissions. Generally speaking, the evening paroxysm is more marked; the patient becomes flushed after eating, or in the excitement of conversation; there is preternatural vividness of expression, which, with the heightened color, sometimes gives a fallacious impression of health. The patient retires to bed, has tossing and uneasy sleep, and awakens in the middle of the night, or toward early morning, bathed in cold perspiration, and in a state of extreme languor. Next day, all these changes are repeated, and under the slow but sure progress of the fever, the patient gradually emaciates, and in the end dies exhausted. The treatment is substantially that of consumption (q.v.).

HECTOCOTYLUS, n. *hěk'tō-kōt'ĩ-lūs* [Gr. *hekātōn*, a hundred; *kotūlos*, a cup]: the metamorphosed reproductive arm of certain of the male cuttle-fishes.

HECTOGRAM, or **HECTOGRAMME**, n. *hěk'tō-grām* [Gr. *hekātōn*, a hundred; *gramma*, a letter, an account]: French weight containing 100 French grammes, being $3\frac{1}{2}$ oz avoirdupois: see **GRAM: METRIC SYSTEM**.

HECTOLITRE, n. *hěk tō-lē'tr* [Gr. *hekātōn*, a hundred; *litra*, a pound]: French measure of 100 French litres, about 22 gallons Eng.: see **LITRE: METRIC SYSTEM**.

HECTOMETRE, n. *hěk tō-mā'tr*, or **HECTOMETER**, *hěk-tōm'ě-tēr* [Gr. *hekātōn*, a hundred; *metron*, a measure]: French measure of 100 French metres, about 328 ft. Eng.: see **METRE: METRIC SYSTEM**.

HECTOR, n. *hěk'tēr* [from *Hector*, the famous Trojan warrior]: a bully; a blustering fellow: V. to threaten; to play the bully. **HECTORING**, imp.: **ADJ.** blustering; insolent. **HECTORED**, pp. *-tērd*.

HECTOR, *hěk'tor*: in legend, bravest hero in the Trojan army: son of King Priam and Hecuba; and married to Andromache, daughter of Eëtion, King of Thebes, in Cilicia, by whom he became the father of Astyanax or Scamandrius, and, as some say, likewise of Laodamas. His exploits as the Trojan Champion are sung by Homer in the *Iliad*. H. having slain Patroclus, friend of Achilles, the latter, forgetting his quarrel with Agamemnon took up arms to avenge his beloved companion, and H. fell by his hand. His body was dragged in triumph by the conqueror round the tomb of Patroclus, but was afterward ransomed

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by Priam, who caused it to be buried it with great pomp. In Ilium, H. was honored as a hero, and sacrifices were offered to him. In compliance with an oracle, his bones are said to have been subsequently conveyed to Thebes, in Boeotia. H. is incontestably the greatest hero in the *Iliad*. Yielding in valor to none, he is defeated by Achilles, not because the latter surpasses him in courage, but because, already wounded and exhausted with prolonged conflicts, he undertakes a single combat, trusting to the aid of Deiphobus. Minerva assumes the form of the latter, and H. is deceived and forsaken. In humanity, he is superior to all. One of the most beautiful episodes in the *Iliad* is that in which H. takes leave of his wife Andromache, and expresses his feelings as husband, father, and prince.

HECTOR, *hěk'tor*, ANNIE (*pseud.* Mrs. ALEXANDER): novelist: b. Ireland 1825. Her published works include *The Heritage of Langdale* (1877); *Maid, Wife, or Widow* (1879); *Freres* (1882); *The Admiral's Ward* (1883); *Her Dearest Foe* (1883); *The Executor* (1883); *Look before You Leap*; *Ralph Wilton's Weird*; *Valerie's Fate* (1884); *Which Shall it Be?*; *The Wooing o't*; *A Second Wife*; *Beaton's Bargain*; *By Woman's Wit*; *Forging the Fetters*; *Mona's Choice*; *A Life Interest*. In 1889 she wrote a series of articles to the *New York Herald*; one, *How I Write My Novels*, gave a charming view of her literary methods. Several of her works have been very popular. She died, 1902, July 10.

HECUBA, *hěk'ū-ba* (Gr. *Hekābe*): second wife of Priam, King of Troy. During the Trojan war, she witnessed the destruction of all her sons, except Helenus, and at last saw her husband murdered by the savage Pyrrhus. After the destruction of Troy, she fell into the hands of the Greeks as a slave, and, according to one form of the legend, threw herself in despair into the sea. Euripides (in his tragedy of *Hecabe*) and other ancient tragedians describe her as a tender mother, a noble princess, and a virtuous wife, exposed by fate to the most cruel sufferings. In Sculpture, she is represented as a matron, whose face, furrowed by grief, betrays a character naturally ardent and passionate.

HEDDING, *hěd'ing*, ELIJAH, D.D.: 1780, June 7—1852, Apr. 9; b. Pine Plains, N. Y.: bishop of the Meth. Episc. Church. He entered the Methodist ministry 1800, became presiding elder of the N. H. district 1807, Boston 1811, and Portland, Me. 1817; was elected and ordained bp. 1824, May; and retired from active labor 1848. He was an able theologian, an earnest, practical man, and did much to establish American Methodism on its present substantial basis.

HEDDLE, n. *hěd'l*: in *weaving*, the meshes by which the *warp* is alternately raised and depressed for the passage of the *weft*: see **HEALDS**.

HEDENBERGITE, n. *hě'dn-běr'jit*: an important variety of lime-iron augite, of a black or blackish-green color, named after *Hedenberg*, the Swedish chemist.

HEDEOMA: see **PENNYROYAL**.

HEDERACEOUS—HEDGE.

HEDERACEOUS, a. *hěd'ér-ā'shūs* [L. *hědĕrā*, the plant ivy]: of or belonging to ivy. **HED'ERAL**, a. *-āl*, composed of or pertaining to ivy.

HEDGE, n. *hěj* [AS. *hegge*; Ger. *hag*, a bush, a shrub; Icel. *hegg*, a kind of bush for hedges—from *hagi*, a hedge; Dut. *hegghe*, a thorn-bush]: a fence of thorn-bushes or small trees: V. to guard or protect; to obstruct; to skulk; to hide the head; to inclose as with a hedge; to surround for defense; to guard against loss, or much loss, by betting on both sides; to guard against loss or miscarriage in one kind of venture by undertaking another of a different kind to a modified extent. **HEDG'ING**, imp. guarding or protecting; among *sporting men*, maneuvering with a bet. **HEDGED**, pp. *hějd*. **HEDG'ER**, n. *-ér*, one who repairs or makes hedges. **HEDGE'LESS**, a. *-lěs*, without a hedge. **HEDGE-BORN**, lowly; obscure. **HEDGE-BOTE**, in *English law*, right of a tenant to cut wood on the land to repair the hedges or fences. **HEDGING-BILL**, a pruning-hook. **HEDGEPIG**: see **HEDGEHOG**. **HEDGE-ROW**, n. *-rō*, a thick-set line or row of small trees or bushes forming a fence. **HEDGE-SCHOOL**, in *Ireland*, an open-air school beside a hedge; a common country school. To **HEDGE A BET**, among *betting men*, to bet on both sides in order to guard against great loss.

HEDGE: line of shrubs or trees standing near each other; grown for fences (see **FENCE**) and for ornamental purposes; extensively used in England; also on the prairies of our western states and in less numbers in other parts of the the country. For hedges around door yards and ornamental grounds the arbor-vitæ is largely used at the north and the Cherokee rose at the south. For fencing fields the osage orange and the honey locust are the leading plants, but the former is not entirely hardy at the extreme north. The willow is largely used, especially in moist soils, and the buckthorn, barberry, cedar, hemlock, and several other shrubs or trees, are grown to some extent. In sparsely timbered regions which were also destitute of stones, the H. was formerly used almost exclusively for fences, but is now largely superseded by barb wire, which is much cheaper and in several respects superior.

The principal objections to hedges for fences are that much work and expense are requisite to start them, while from three to eight years must elapse before they become efficient. In order to keep them within bounds pruning is needed from one to three times each year. They take large quantities of moisture and plant food from the soil, and injure the crops growing by their sides. Some of the shrubs used for hedges also fill the soil with strong roots, which interfere with cultivation in their vicinity, and throw up numerous sprouts, when they are cut or broken. The fact that the H. cannot be moved to another location is also a serious objection to its use for any except boundary fences.

Before setting a H. a strip of land at least eight ft. wide should be deeply plowed, and harrowed until the surface soil is very fine. If the land is wet it should be slightly ridged,

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but if dry a level surface is preferable. A trench should be opened and the plants or cuttings carefully set in a straight line. During the first season the plants need frequent and careful cultivation. Weeds are almost as injurious in a young H. as they are in a grain field. Vacancies should be promptly supplied by new plants or cuttings. For three or four years the ground near the H. should be kept clean. Weeds appearing among the plants must be promptly removed. Pruning must be commenced early and continued while the H. remains.

HEDGE, *hēj*. FREDERICK HENRY, D.D.: educator. b. Cambridge, Mass., 1805, Dec. 12. He studied in Germany 1817-22, graduated at Harvard College 1825 and the Cambridge Divinity School 1828 was ordained a Unit. minister 1829, held pastorates in W. Cambridge, Bangor, Providence, and Brookline till 1872; was prof. of ecclesiastical history in the Cambridge Divinity School 1857-77, and prof. of German in Harvard College 1872-81. He was for several years pres. of the American Unit. Assoc., and editor of *The Christian Examiner*. His writings show rich thought and an attractive style. Beside numerous essays and magazine articles he has published: *Prose Writers of Germany* (1848, 3d. ed. 71), *Christian Liturgy for the Use of the Church* (1853), *Reason in Religion* (1865, 2d ed. 75), *The Primeval World of Hebrew Tradition* (1870), *The Ways of the Spirit, and Other Essays* (1877), *Atheism in Philosophy, and other Essays* (1884), etc. He d. 1890, Aug. 21.

HEDGEHOG (*Erinaceus*): genus of insectivorous quadrupeds, type of the family *Erinaceidæ*. The muzzle is rather elongated, the neck short, the limbs short, the feet five-toed, the claws strong, the tail short, the body covered on the upper parts with sharp spines, and with hair below, and capable of being rolled up into a ball by means of a powerful muscle extended under the skin. The teeth are 36 in number, 20 in the upper jaw, and sixteen in the lower,



Hedgehog (*Erinaceus Europæus*).

but considerable difference of opinion has existed among naturalists as to the character of some of them. The middle incisors are very long, and stand forward; those of the upper jaw are widely separated; the lateral ones small. Like many other *Insectivora*, hedgehogs are not limited to

HEDGEHOG PLANT—HEDGE-MUSTARD.

insect food, but prey also on larger animals, as reptiles, small quadrupeds, and birds; they are fond of eggs and of milk, and in confinement will readily eat soaked bread cooked vegetables, or porridge. Their power of rolling themselves into a ball, from which the spines project on every side, is their means of almost entire protection from enemies. The spines are curiously bent near the root, and so set, that on the contraction of the muscle by which the animal rolls itself up, they are held firmly in their position, their points toward the adversary. They are very strong and sharp; their elasticity is also so very great, that the animal can sustain falls from great heights without apparent injury.

The Common H. (*E. Europæus*) is a native of most parts of Europe. Its short ears are one of its distinctive specific characters. It is seldom above $9\frac{1}{2}$ inches in length. Its spines are about an inch long. It readily kills snakes, and even vipers, which it eats, beginning always at the tail. It is said to be capable of resisting in an extraordinary degree not only the venom of the serpents, but other kinds of poison, however administered. A. H. has been known to eat great numbers of cantharides (Spanish flies) without injury, though one would have caused great agony to a dog. It brings forth from two to four young at a birth, and provides for the occasion a curiously constructed nest of dry leaves, of which the roof is capable of throwing off the rain. The young are blind at first; their ears also are closed—as unusual as the former is common among animals—their bodies are covered with soft incipient spines. In winter, the H. becomes torpid, retiring to some hole or nest at the base of a tree, beneath roots, or in some such situation. It provides no winter store, and scarcely any other European animals hibernate so completely.—The H. is easily tamed, becomes very familiar, and is very useful in houses where *black beetles* are troublesome. Night is its period of activity.—The flesh of the H. is eaten in some parts of Europe.—Other species of H. are found in Asia and Africa.

HEDGEHOG PLANT: name given to those species of medick (*Medicago*) which have the pods spirally twisted and rolled into a ball, beset with spines. The peculiar appearance of the pods makes them objects of interest, on which account they sometimes find a place in flower-borders; and like the other medicks (q.v.), they are useful in the countries in which they abound, as affording excellent food for sheep and cattle. They are particularly plentiful on sandy grounds near the sea in parts of S. America, and their pods are too plentiful in the S. American wool exported to Europe and America.

HEDGE-MUSTARD (*Sisymbrium*): genus of plants of nat. ord. *Cruciferae*, mostly annual or perennial herbaceous plants with very various foliage, small yellow or white flowers, and a long, roundish or 6 angled pod (silique). The COMMON H. (*S. officinale*), was formerly employed in medicine for catarrhs and other ailments. It is said to be diaphoretic and expectorant. It has a mild pungency, and

HEDGE-SPARROW.

is sometimes cultivated as a pot-herb. It is an annual, plentiful in waste places and by waysides, sometimes two ft high, branched, with runcinate or deeply lobed leaves, stem and leaves hairy, flowers very small and yellow. The pods are erect, and closely pressed to the stalk.—BROAD-LEAVED H., or LONDON ROCKET (*S. irio*), is said to have sprung up in great abundance on the ground desolated by the fire of London 1666.—FINE-LEAVED H., or FLIX-WEED (*S. Sophia*), about 2 ft. high, growing in waste places, having leaves doubly or trebly pinnatifid, was formerly administered in dysentery and hysteria, and the seeds as a vermifuge.

HEDGE-SPAR'ROW, or HEDGE-WAR'BLER, or HEDGE-ACCEN'TOR, or DUN'NOCK (*Accentor modularis*): little bird of the family *Sylviadæ*, a common native of most parts of



Alpine Accentor (*Accentor Alpinus*).

Europe. It is not quite so large as the house-sparrow which it somewhat resembles in dull brownish plumage, but in little else; its slenderness of bill, and its whole form, showing it at once, notwithstanding its name, to be of a different family. The position of the genus is doubtful, but it is, with probability, referred to the thrushes and warblers. It feeds principally on insects. It is one of the earliest spring songsters, having a sweet plaintive song; and the nest is one of the first that is seen in spring. The nest, of green moss, roots, and wool, lined with hair, is usually placed rather low in a bush or hedge. The eggs are four or five in number, of a delicate and spotless bluish green. The cuckoo very often lays its egg in the edge-sparrow's nest. The edge-sparrow is found in summer chiefly in northern temperate Europe, migrating southward in winter; but in Britain it remains all the year.—Another species of the same genus, the ALPINE WARBLER, or ALPINE ACCENTOR (*A. Alpinus*), a larger bird, lighter and more varied in color, has in a few instances been found in Britain: it is common in the Alps, and other mountains of France, Germany, and Italy.—Other species of accentor are found in the old and new world. They all are of dull plumage. In this genus the bill is more conical than in the other *Sylviadæ*.

HEDJAZ—HEEM.

HEDJAZ, *hěj-áz'* (the land of pilgrimage): maritime province of Arabia, extending along the e. shore of the Red Sea; bounded n. by the Syrian desert and the Gulf of Akaba, e. by the province of Nedjed, and s. by that of Yemen. It is almost entirely unproductive, being chiefly sandy or stony. Containing the two sacred cities, Mecca and Medina—the former the birthplace of Mohammed, the latter the place in which he is interred—H. is the 'Holy Land' of Arabia. It is traversed annually by vast numbers of pilgrims.

HEDJ'RAH: see **HEGIRA**.

HEDONISM, n. *hē'don-izm* [Gr. *hēdonē*, pleasure, enjoyment]: tenets of the Cyrenaic school of philosophy, founded by Aristippus, a disciple of Socrates, who taught that pleasure was the end of life, and that it was the duty of a wise man to enjoy it without being controlled by it: see **ARISTIPPUS**. One of the most eminent of this school was Euhemerus: see **EUHEMERISM**. Hedonism, or the Cyrenaic doctrine, finally gave way to Epicureanism.

HEED, n. *hēd* [AS. *hedan*; Dut. *hoeden*; Ger. *hüten*, to keep guard, to observe: comp. Gael. *uidh*, care, attention]: care; attention; regard: V. to regard with care; to mind; to observe; to attend to. **HEED'ING**, imp. **HEED'ED**, pp. **HEED'LESS**, a. careless; inattentive. **HEED'LESSLY**, ad. *-lī*. **HEED'LESSNESS**, n. inattention; carelessness. **HEED'FUL**, a. *-fūl*, attentive; watchful; observing. **HEED'FULLY**, ad. *-lī*. **HEED'FULNESS**, n. vigilance.

HEEL, n. *hēl* [AS. *hel*; Icel. *hæll*; Dan. *hael*; Dut. *hiel*, the heel]: the hind part of the foot; hind part of a shoe or stocking; the latter or remaining part of a thing; among *seamen*, the lower end of anything, as of a mast: V. to add a heel to; in *OE*, to dance. **HEEL'ING**, imp. **HEELED**, pp. *hēld*. **HEEL-PIECE**, a piece fixed on the heel of a shoe. **HEEL-TAP**, n. in *toasting*, the liquor left undrunk in a glass. **NECK AND HEELS**, the whole length of the body. **TO BE AT THE HEELS**, to pursue closely; to follow hard. **TO GO HEELS OVER HEAD**, to go over so as to bring the heels uppermost; to move in a hasty, precipitate manner. **TO HAVE THE HEELS OF**, to outrun. **TO LAY BY THE HEELS**, to fetter; to confine. **TO SHOW THE HEELS**, to flee; to run from. **TO TAKE TO THE HEELS**, to take to flight. **OUT AT HEELS**, worn out; in very poor or decayed circumstances, as stockings worn out at heels.

HEEL, v. *hēl* [AS. *hyldan*, to incline: Icel. *halla*, to lean toward: Dan. *helde*, to slope]: to lean on one side, as a ship. **HEEL'ING**, imp.: N. the leaning over to one side of a vessel. **HEELED**, pp. *hēld*.

HEEM, *hām*, **JAN DAVIDSZ VAN**, or **JOHANNES DE**: the most celebrated painter of what is called 'still-life' that the Dutch school has produced: born at Utrecht 1600 or 1604; d. 1683 or 4. He studied under his father, and soon obtained immense sums for his pictures. Toward the close of his life, he removed to Antwerp, where he died. H.'s pictures represent, for the most part, splendid vases of fruits and flowers, musical instruments, and ornaments

HEEN—HEFT.

of various kinds. He painted a garland of flowers for a certain Jar Vander Meer; who refused 2,000 guilders for it, but afterward gave it to the Prince of Orange, who took it with him to England. H.'s coloring is exquisite, and his use of *chiaroscuro* unsurpassable.

HEEN, *hên*—CHOW, *chow*—TING, *ting*—FOO, *fô*: Chinese geographical terms, designating the relative rank of cities and districts. *Heen* indicates the smallest division, though its city may be an important one; thus, Shanghai-heen is a large city and district, while the dept. in which it is situated, Sungkiang-foo, to which it is subordinate, is a smaller place. Generally speaking, however, the terms designate the rank of cities, from *foo*, the chief, to *heen*, the least in size.

HEER, or HIER, n. *hēr* [Scot.]: the sixth part of a hasp or hank of yarn; two cuts.

HEEREN, *hā'rèn*, ARNOLD HERMANN LUDWIG: German historical scholar: 1760, Oct. 25—1842, Mar. 7; b. Arbergen, near Bremen, where his father was at that time pastor. He received his education at the cathedral school of Bremen, and the Univ. of Göttingen. He made himself known to the literary world by two philological works—an edition of Menander's *De Encomiis* (Göttingen 1785), and *Eclogæ Physicæ et Ethicæ* of Stobæus (4 vols. Göttingen 1792–1801). In 1794, he was appointed prof. of philosophy, and 1801, prof. of history at Göttingen. He married 1797 a daughter of Heyne. His lectures in the university referred, from the very first, more to Greek and Roman antiquities, and to the history of the fine arts, than to philology, strictly so-called: the latter, indeed, was finally quite thrown in the background. In 1793–96, appeared at Göttingen his *Ideen über Politik, den Verkehr und den Handel der vornehmsten Völker der alten Welt* (4th edit. 5 vols. 1824–26), which has secured him a place among the most eminent modern historians. Less satisfactory to scholars was *Geschichte des Studiums der classischen Literatur seit dem Wiederaufleben der Wissenschaften* (2 vols. Gött. 1797–1802); but *Geschichte der Staaten des Alterthums* (Gött. 1799; 5th ed. 1826), and his *Geschichte des Europ. Staatensystems und seiner Colonien* (Gött. 1809; 4th ed. 1822) abounded in new views and acute expositions. For *Untersuchungen über die Kreuzzüge*, he received the prize from the National Institute of France. His *Kleine historische Schriften* (3 vols. Gött. 1803–08) contain interesting treatises. In 1821–26, he published an edition of all his historical works (*Historischen Werke*), 15 vols. His works are characterized by calmness, impartiality, and insight.

HEFT, n. *hěft* [from *heaved*]: in *OE.*, a heaving or retching; an effort.

HEFT. n. *hěft*: see **HAFT**.

HEGEL.

HEGEL, *hă'gəl*, GEORG WILHELM FRIEDRICH: one of the greatest German philosophers: 1770, Aug. 27—1831, Nov. 14; b. Stuttgart. His father was an official in the fiscal service at Württemberg. H. became, 1788, a student in the Tübingen Theological Institute, where his speculative abilities, however, were outshone by his younger companion Schelling. After leaving the university 1793, he was a family tutor at Bern and Frankfurt-on-the-Maine for six years, while he applied himself chiefly to the study of the life of Jesus, considered as simply the son of Joseph and Mary, and of the philosophy of religion. In the beginning of 1801, he left Frankfurt for Jena, where he published his first work, *Ueber d. Differenz d. Fichte'schen u. Schelling'schen Systems* (1801), and entered the univ. as *Privat-docent*. Next year, he joined Schelling, to whose philosophy he seems at this time to have adhered, in the editorship of *Das Kritische Journal für Philosophie*. His lectures in Jena did not attract much notice, but it was at this place, while the din of the battle in 1806 was sounding through the town, that he completed his first important work, *Die Phänomenologie d. Geistes* (1807), which he used afterward to call his voyage of discovery. Shortly before the battle, he had been made extraordinary prof. of philosophy; but the disaster which that conflict brought upon Jena compelled him to seek subsistence elsewhere, and he went, accordingly, at Niethammer's request, to Bamberg, where he edited a political paper for two years. In 1808, he was appointed rector of the gymnasium at Nuremberg, and there he had just completed his *Wissenschaft d. Logik* (3 Bde. 1812-16), when he was called, 1816, to a professorship of philosophy in Heidelberg, where he published *Encyklopädie d. philosophischen Wissenschaften* (1817; 3te Aufl. 1830), in which first he developed his complete system. In 1818, he was called to Fichte's place in Berlin, and there he began to gather around him a new philosophical school. His lectures, delivered in a stammering voice, and without rhetorical ornament, yet with the impressiveness of being the expression of laborious thought, attracted hearers from all ranks and professions. He rose to considerable political influence through his official connection with the Prussian government, and his philosophy in some respects lost credit from the generally conservative tendencies of his administration. Still, in his *Rechtsphilosophie* (1821), he demands representation of the people, freedom of the press, publicity of judicial proceedings, trial by jury, and the administrative independence of corporations. In the midst of an active life, he was suddenly cut off by cholera, and was buried beside Fichte. A complete collection of his works was published, 18 vols. (Berlin 1832-41), and his life written by Rosenkranz (1844).

At first, as has been intimated, H.'s philosophy started from the same position as Schelling's—the principle of the identity of knowing and being; but he soon departed from Schelling's theory, that this identity can be apprehended only through an intellectual intuition, of which the understanding can render no account. Carrying out rigorously

HEGEL.

the principle from which both started, as embodied in the proposition of Spinoza, that the order and connection of thoughts are the same as the order and connection of things, H. sought to find the universal form which characterizes the process both of existence and thought. This universal form he recognized as the process of becoming (*Werden*). But the process of becoming is only the union of position and negation; for all that becomes at once posits, and, by passing into something else, removes itself. Identical with this process is the process of thought; for every thought involves its contradictory. But the contradictory is not a mere negation; it is in itself positive; the conception of unity, e.g., is not more positive than its contradictory, the conception of plurality. Every thought, therefore, as it involves its contradictory, adds to its own contents, and by the combination of the two contradictories, we rise to absolute knowledge. This process, involving in it the three stages of position, negation, and the union of both, determines the method of H.; for according to this method, his entire system is organically necessitated in all its parts to a threefold division corresponding to the three stages in the process of thought and existence. The point from which all knowledge must start is thought simply and in itself, the science of which, logic, forms, therefore, the first part of this system. But thought passes into something other than itself, exists out of itself in nature, and the philosophy of nature accordingly ranks as the second part. Returning again from its estrangement in nature, thought becomes conscious of itself in mind, and consequently the philosophy of mind forms the third part. It would be profitless to give a mere enumeration—and nothing more could be attempted here—of the various subdivisions, in their degrees of subordination, into which these three grand divisions are separated. For an account of the system, consult, besides the ordinary histories of philosophy, Vera's *Introduction à la Philosophie de Hegel* (Paris 1855), and Haym's *Hegel u. seine Zeit* (Berlin 1858). For the English student of H., Dr. Hutchison Stirling's *Secret of H.* is invaluable.

Hegelianism is commonly employed to denote the direction of philosophical speculation in the large school which arose under the influence of Hegel. During H.'s life and on till 1841, when Schelling came to Berlin, Hegelianism found a very efficient organ in the *Jahrbücher für wissenschaftliche Kritik* (1827-47, ed. by Henning); and through the influence of the Prussian minister, Von Altenstein, a large number of the philosophical chairs in the Prussian universities were secured for Hegelian professors. In the second grand department into which H. had divided his system, the philosophy of nature, his speculations did not give the same impetus to inquiry as those of Schelling had given; but this may be accounted for from the consideration that the enthusiasm for physical investigations, which was rising when Schelling's early speculations appeared, had reached its culmination before H. began to attract notice. In logic, also, owing to H.'s own exhaust-

HEGEMONIC—HEGESIPPUS.

ive treatment, little has been done by his disciples, except in the way of explication and apology, of which Schaller's, Erdmann's, and Hinrichs's works on the science are specimens. But in psychology we find developments of the Hegelian principles by Rosenkranz, Michelet, and Erdmann; in jurisprudence, by Gans; in ethics, by Michelet; in æsthetics, by Vischer, Hinrichs, Hotho, Rosenkranz, Ruge, and Schnaase; in the history of philosophy, notwithstanding H.'s own work, by Erdmann, Michelet, Rosenkranz, Schwegler, Zeller, etc. In the philosophy of religion, however, Hegelian speculation has been more widely and powerfully influential than in any other department—Daub, Marheineke, Rosenkranz, Conradi, Göschel, Vatke, and a host of other more or less known writers, joining with H. in seeking to elicit the eternal meaning embodied in the historical and symbolical forms of Christianity. But as soon as Hegelianism reached this sphere of speculation, it began to develop antagonistic tendencies. These became especially apparent four years after H.'s death, in the controversy raised by Strauss's *Leben Jesu* (1835), and continued by his *Christliche Glaubenslehre* (1840). The Hegelians then split into three sections, called severally the right, left, and centre, according as they represent supernaturalism, rationalism, or a mediating mysticism. Among those of the extreme left, known also as the *Young Hegelians*, and dubbed by Leo with the felicitous but untranslatable diminutive *Hegelingen*, the Hegelian philosophy, which had before been ecclesiastically and politically conservative, became thoroughly radical. In 1838, Ruge began to edit for them a special organ, *Die Halleschen Jahrbücher*, which had great influence among the youth of Germany, but was prohibited, 1847, after having been transferred to Leipsic under the title *Die Deutschen Jahrbücher*. Weisse, Fichte (the younger), Ulrici, Fischer, and Carriere, were named pseudo-Hegelians, because, though retaining a large element of Hegelianism, they introduce at times an extraneous method and divergent results. As an independent system, Hegelianism is not now recognizable in Germany, though its general leavening influence may be traced through many ramifications in various systems of philosophy. Beyond Germany, Hegelianism in some of its forms is represented in France, in Italy, in Denmark, and in Sweden by numerous philosophers of note; and has also in recent years exerted an important influence on British and American thought, especially in the region of psychology.

HEGEMONIC, a. *hē'jē-mōn'ik* [Gr. *hegēmōnikos*, fitted for a command, chief]: ruling; predominant; also **HEGEMONICAL**, a. *-ī-kāl*. **HEGEMONY**, n. *-mōn-ī* [Gr. *hēgēmōniā*, leadership]: leadership of one state over another; preponderant influence or authority.

HEGESIPPUS, *hēj-e-sĭp'pūs*: earliest of the Christian Church historians. He was born of a Jewish family in Palestine about the beginning of the 2d c., but became a Christian at an early age, and was a member of the Church

in Jerusalem. He is supposed to have died 180. He went to Rome in the pontificate of Anicetus, visiting on his journey many churches, and especially that of Corinth, where Primus was bishop. He remained in Rome till the death of Soter (176). It was during his sojourn in Rome that he composed his history, in five books, *Memorials of Ecclesiastical Affairs*, which, however, appear not to have formed a complete and continuous history, though they extend from the death of Christ down to the writer's own age. Unhappily, the work, as a whole, has perished, and we know it only from some fragments which Eusebius has embodied in his own history, and the most important of which are his account of the martyrdom of St. James and of St. Simeon of Jerusalem. Eusebius speaks highly of the doctrinal fidelity of H., and St. Jerome of the simplicity and purity of his style. Another work on the Wars of the Jews (also in five books), ascribed to H., is confessedly spurious. The most complete collection of the fragments of his writings is that of Gallandus, in vol. II. of his great collection. See also Grabe, *Spicilegium*, II.; and Fabricius, *Bibl. Græca*, VII. 156.

HEGIRA, or HEDJRAH, n. *hē-jī'rā* or *hēj'rā*, more fully HEDJRAT AL-NABI [Ar. *hadjara*, to remove or desert; *hijrah*, separation, emigration]: Emigration of Mohammed (q.v.); the Mohammedan era, dating from 622, July 15 or 16—assumed as the date of Mohammed's leaving Mecca; thence, any exodus or departure. The tribe of the Koreish having resolved to slay the new prophet, their kinsman, he secretly left Mecca, 622, Sep. 22, and went to Medina, where, partly from a feeling of jealousy toward Mecca, partly because his new doctrine had already found here many adherents, he was so well received and so vigorously supported in the wars which he then began to wage against his adversaries, that the rise and progress of Mohammedanism was said to date in reality from the time of Mohammed's leaving Mecca. The H., therefore, was made the starting-point of a new era—the Mohammedan (*Tarikh Alhijrah*)—by Caliph Omar, who, 639 or 640, with the aid of a Persian, Harmozan, instituted the new Moslem calendar. It does not, however, as is generally supposed, begin from the day of the departure itself, but from the first of the Moharram (the first month of the year) preceding it—i.e., 68 days earlier.

The Mohammedan year, as a lunar year, is shorter than ours by 10 days, 21 hours, and $14\frac{2}{3}$ seconds; and this renders the exact transfer of Mohammedan dates into dates of the Christian calendar a very difficult task. An elaborate method has been invented for that purpose by Ideler; an easy though not minutely accurate way of finding the year, but not the month and the day, is by the deduction of 3 per cent. from the given Mohammedan year, and the addition of 622 to the sum so obtained; e.g., the year of the H. corresponding to A.D. 1862 being 1279, deduct 3 per cent., or about 39, = 1240, add 622 = 1862.

HEIDE, *hī'dē*: small town of Prussia, province of Sles-

HEIDELBERG—HEIDELBERG CATECHISM.

vig Holstein, in N. Ditmarsh, 32 m. n.n.w. of Gluckstadt. It is a pleasant, well-built town, with a large market-place. The inhabitants are employed chiefly in agriculture and general trade. Pop. about 10,000.

HEIDELBERG, *hî' del-bêrch*, or *-bêrg*: ancient city of Germany, in the grand duchy of Baden, on the left bank of the river Neckar, in one of the most beautiful districts in the country, on a narrow strip of ground between the river on the n., and the n. extremity of the Geisberg Mountains on the south. It is 13 m. s.e. of Mannheim, and about 54 m. s. of Frankfurt-on-the-Maine. The town consists mainly of one street about three m. in length. Among its most important buildings are the Church of the Holy Ghost, through which a partition-wall has been run, and in which service according to the Rom. Cath. and Prot. rituals is simultaneously carried on; the Church of St. Peter's on the door of which Jerome of Prague, companion of Huss, nailed his celebrated *theses*, at the same time publicly expounding his doctrines before a multitude assembled in the churchyard; and the ruins of the castle which was formerly the residence of the Electors Palatine, and which, 1764, was set on fire by lightning, and consumed. In the cellar under the castle is the famous Heidelberg Tun, 36 ft. long and 24 ft. high, and capable of containing 800 hhd.

H. is celebrated for its university, which, after those of Prague and Vienna, is the oldest in Germany. It was founded by the Elector Ruprecht I., 1356; and after receiving papal sanction, 1386, flourished until the thirty years' war, when it began to decline. In 1802, however, when the town, with the surrounding territory, was assigned to the Grand Duke of Baden, and in 1803, when the Elector Charles Frederick raised the university to a new life, its new era began, and it rapidly became famous. It comprises faculties of theology, law, medicine, and philosophy, has 157 professors (38 ordinary, 26 extraordinary) and lecturers, and is attended by 1,640 students, including 800 to 900 in summer: of these a great proportion are English and Americans. Its library consists of about 300,000 vols., and many valuable mss. The quincentenary of the university was celebrated with elaborate ceremonials, 1886.

H., originally an appanage of the bishopric of Worms, became, 1155, the seat of the Counts Palatine, and continued to be so for near six centuries, undergoing all the vicissitudes of that much-suffering electorate: see PALATINATE. After the Reformation H. was long the headquarters of German Calvinism, and gave its name to a famous Calvinistic catechism. H. suffered much during the thirty years' war, was savagely treated by the French, 1688, and was almost totally destroyed by them, 1693. Pop. (1871) 19,988; (1880) 24,417, of whom two-fifths are Rom. Cath., and 600 Jews. Pop. (1890) 31,739; (1900) 40,121.

HEIDELBERG CATECHISM, *hî' del-bêrg*: a catechism published first at Heidelberg, 1563, drawn up by Zechariah Ursinus for the use of the Reformed Church, and pub-

HEIFER—HEIGHTS.

lished in the Palatinate. It was received beyond this limit, was approved by the Synod of Dort, and was the model on which the Westminster Assembly framed the Shorter Catechism: see HEIDELBERG.

HEIFER, *n.* *hěf'ér* [AS. *heafore*—from *heah*, high; *fear*, an ox: prov. Eng. *heckfor*]: *literally*, a full-grown ox or cow; a young cow.

HEIGH-HO, *int.* *hī'hō*: an exclamation expressing uneasiness or languor.

HEIGHT, or HIGHT, *n.* *hīt* [from *HIGH*, which see: Dut. *hoogte*, height—from *hoog*, high]: distance above the ground; elevated ground; a hill; altitude of any thing or person; elevation of rank, excellence, or fame; highest state; crisis. HEIGHTEN, or HIGHTEN, *v.* *hīt'n*, to raise higher; to increase; to improve; to aggravate. HEIGHTENING, or HIGHTENING, *imp.* *hīt'ning*: N. the making high; exaltation. HEIGHTENED, or HIGHTENED, *pp.* *hīt'nd*. HEIGHTENER, or HIGHTENER, *n.* *hīt'nēr*, one who.—SYN. of 'height': elevation; altitude; summit; ascent; eminence; pre-eminence; prominence.

HEIGHTS, MEASUREMENT OF: operation performed in any one of four ways: by the aid of trigonometry; by levelling; by ascertaining the atmospheric pressure at the top and bottom of the height by the barometer; or by ascertaining the boiling-point of water at the top and bottom by the thermometer. For the second and third methods (see LEVELLING: BAROMETER): the first and fourth are here considered. The first method is often more convenient than any of the others, as it does not require the ascent of the height, nor even a near approach to it. There are two cases of the problem:—Case 1 (when there is level ground in front). Let ACD be a height of irregular form, take O and M, two stations on the level ground in front, find the

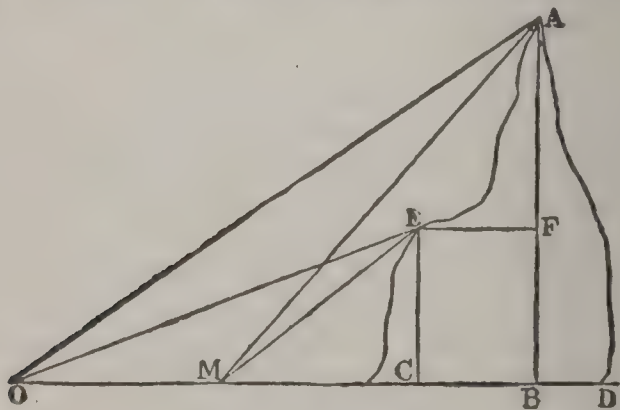


Fig. 1.

angles AOB, AMB, and measure OM; then as AOM, AMO (which is AMB subtracted from 180°), and OM are known, AO can be found; and since now AO and the angle AOM are known, AB can be found. If the height is regular in form, all that is necessary to be done is to measure OC, calculate CB, find AOB; then AB can at once be calculated by the ordinary rules.—Case 2 (when there is no level ground in front). Suppose the height of A above O (fig. 2) is to be

HEIGHTS.

found. Take another station M, from which A and O are visible, measure the angles AOM, OMA, and find OM by levelling (q.v.), then OA can be found; at O take the angle AOB (the angular altitude of A), then from OA and AOB, AB can be known. If the height of one point above another—the latter not being the observer's station—be required, then the height or depression of the first, and the height or depression of the other above or below the observer's station, must be found separately as before, then

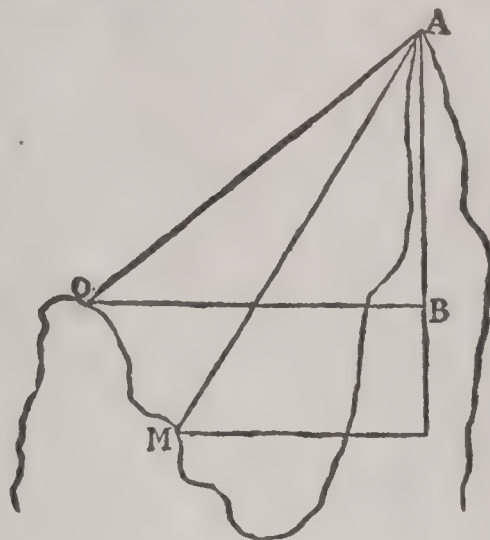


Fig. 2.

the difference (if both are above or both below the observer's level) or sum (if one is below it) of these results gives the number required. For instance (fig. 1) the height of A or AB is first found, CE or the height of E is next calculated, and their difference, $AB - CE$, or AF, is the height of A above E.

Besides this rigorous trigonometrical method, there are many ways of estimating approximately the height of objects, with little or no calculation. For instance, if the height is perpendicular, and the ground in front on a level with the base, take two pieces of wood, hinged or jointed together at an angle of 45° , or a large pair of compasses opened to that angle; place one leg horizontal and directed to the base of the object, and move the instrument toward it, or from it, until the other leg point to the top; then the distance of the angle from the bottom gives the height.

The fourth method is often used in measuring the height of mountains when great accuracy is not required, or when the apparatus requisite in applying the other methods is not at hand; all the apparatus required in this method being two thermometers, a tin pot to boil the water, and a book of tables such as those given by Col. Sykes in *Hints to Travellers*. The method depends on the fact, that vapor of water or steam has a certain tension or elastic force according to its temperature, thus: at 32° it can support 0.2 of an inch of mercury; at 80° it can support 1 inch; at 150° , 7.42 inches; at 180° , 15.5 inches; at 212° (the ordinary boiling-point), 30 inches, or the whole pressure of the air.

HEILBRONN—HEILPRIN.

By observing, therefore, the temperature at which water boils, we can find, by means of a table of the elastic force of vapor at different temperatures, the pressure, in inches of mercury, to which it is subject at the time. Now, beginning at the level of the sea, it is found by experiment that a fall of 1° in the boiling-point corresponds to an elevation of 510 ft.; at an elevation of 2,500 ft., the difference for a degree is 520 ft.; at 5,000, it is 530 ft.; at 17,000, it is 590 ft. An approximation for medium elevations may be made by taking 530 ft. on an average for the difference corresponding to 1° , then 530 multiplied by the number of degrees between the boiling-point and 212 will give, approximately, the height.

HEILBRONN, *hîl-brôn'* (formerly, *Heiligbronn*, *holy well*): important trading and manufacturing town of the kingdom of Württemberg, in the circle of Neckar, on the right bank of the river Neckar, in a beautiful and fertile valley, 28 m. n. of Stuttgart. The church of St. Kilian, built 1013–1529, a noble edifice, partly Gothic and partly Renaissance; the old town-hall, *der Diebsturm*—the Thief's Tower—in which Götz von Berlichingen was confined; and the house of the Teutonic knights, now a barrack, are the chief buildings. Though wine and field and garden produce are still cultivated by many of the inhabitants, trade and manufactures are the chief branches of industry. Paper, chemical products, silk, dye-stuffs, gold, silver, and iron wares, tobacco, vinegar, etc., are manufactured for export. Gypsum and sandstone are quarried in the vicinity. Pop. (1880) 24,415; (1900) 37,891.

HEILIGENSTADT, *hî'li-ghên-stât*: regularly built and walled town of Prussian Saxony, on the Leine, near the Hanoverian frontier, 50 m. n.w. of Erfurt. It was cap. of the dept. of the Harz, in the kingdom of Westphalia, 1807–14. Weaving, dyeing, and paper-manufacture, are carried on. Pop. about 7,000.

HEILPRIN, ANGELO: an American naturalist; b. in Satoralja-Ujhely, Hungary, 1853. March 31; was educated in Europe; successively prof. of invertebrate paleontology and geology at the Academy of Natural Sciences, 1880–1900, and executive curator, 1883–92; prof. of geology at Wagner Free Institute, 1885–90; president of the Geographical Society of Philadelphia for five years; leader of Peary Relief Expedition in 1892; and represented the National Geographical Society in the island of Martinique, 1902. Immediately after the terrible eruption at Mont Pelee he started for the scene of the disaster, and on May 31 ascended to the summit of the volcano and made observations at the crater. He wrote *Mont Pelee and the Tragedy of Martinique*, a *Study of the Great Catastrophe of 1902*; *Atlas Ka and the Klondike*; *Animal Life of Our Seashore*; *The Arctic Problem*, etc.

HEILPRIN, *hîl-prîn*, MICHAEL: 1823–1888, May 10; b. Piotrkow, Poland: scholar. He removed with his parents to Hungary 1842, joined the revolutionary party 1848, was in charge of the literary bureau in the interior dept. of

HEILSBERG—HEINE.

Louis Kossuth's brief govt. 1849, and with his father came to the United States 1856. He contributed to the literary journals and magazines, was one of the chief compilers of *Appleton's American Cyclopædia*, published *The Historical Poetry of the Ancient Hebrews*, 2 vols. (1879,80), and was active in settling a large number of Russian-Jewish refugees on agricultural lands in the United States 1882-3.

HEILSBERG, *hīls' bĕrch* : small town of Prussia, province of Prussia, very beautifully situated on the Alle, 43 m. s. of Königsberg. It was originally the chief town of Ermeland, one of the old divisions of Poland. Cloth, leather, etc., are manufactured. Pop. (1880) 5,411.

HEILSBRONN, *hīls-brōn'* : small town in the Bavarian circle of Middle Franconia (pop. 1,000), noted as the ancient burial-place of the Hohenzollern Burggrafs of Nürnberg. The convent of Heilsbronn owes its origin 1132 to Bp. Otho of Bamberg, and its subsequent rich endowment to the Counts of Ahenberg, from whom it passed in heritage to the Nürnberg princes, who thenceforward retained the lay-proprietorship of the institution. Nearly all the members of their house were buried here till the end of the 15th c., when it became the burial-place of the Franconian branch of the Hohenzollerns till their surrender of their Franconian hereditary lands. Since the suppression of the monasteries 1555, little has been done to keep up the splendor of H. ; but the church still retains many interesting monuments, at once commemorative of ancient German history and illustrative of the progress of art in Germany during the middle ages. The village of H., which lies on the Schwabach, possesses mineral springs, and has manufactories of wax-cloth and woolen goods. The history and antiquities of H. convent have been made the subject of several interesting treatises, of which the most complete is Hocker's *Heilsbronnisches Antiquitätenschatz*, and Stillfried's sequel to the same work.

HEIMSKRIN'GLA : see SNORRI STURLESSON.

HEINE, *hī'nĕh*, HEINRICH : German poet, journalist, essayist, and wit : 1799, Dec. 13—1856, Feb. 17 ; b. Düsseldorf, of Jewish parents. In 1819, he proceeded to the Univ. of Bonn for the purpose of studying law ; but he applied himself with greater ardor to modern and ancient German literature, under the guidance of his master and friend, August Wilhelm Schlegel. He subsequently studied at Berlin and at Göttingen, at which latter place he took his degree doctor of law 1825. About this time he abandoned Judaism, and was baptized in the Lutheran Church of Heiligenstadt. For this so-called 'apostasy' he has received much abuse, which seems out of place, as he never gave signs of being very much of a Christian, and had been only nominally a Jew. As a change of position for secular reasons, his act is open to criticism on a different line. A visit to the Hartz and to Italy supplied him with materials for his *Reisebilder* (Pictures of Travel, Hamb. 4 vols. 1826-31). This book obtained, on its first

appearance, an extraordinarily brilliant success. 'Young Germany,' in particular, became wild with enthusiasm. His *Buch der Lieder* (Book of Songs, Hamb. 1827; 32d edit. 1872)—a portion of which had first appeared as *Youthful Sorrows*, Berlin, 1822—was no less fortunate. Many of these songs are of the most exquisite and ethereal beauty. They are unmatched in German literature, except by the lyrics which Goethe wrote in his youth. The revolution of July threw H. into a violent fit of democracy, and in 1831 appeared his *Kahldorf über den Adel, in Briefen an den Grafen M. von Moltke* (Kahldorf on the Aristocracy, in Letters addressed to Count M. von Moltke). His freedom of opinion and language gave great offense to the government, and he seems to have been in some danger of imprisonment: at any rate, he found it advisable to leave Germany, and 1831, May 1, he went to Paris, where he resided for the rest of his life, cultivating belles-lettres, both with a brilliancy and with a malice hitherto almost unheard of. In 1835, he married a certain 'Mathilde,' who figures much in his writings, and in 1843-4 visited his native country, to see his mother. On his return, he published *Deutschland; ein Wintermärchen* (Germany; a Winter's Tale), in which he recounts imaginary adventures and burlesque episodes, and in which a great number of his countrymen, kings, statesmen, professors, authors, artists, etc., are mercilessly satirized and abused. In 1847, H. was attacked by disease of the spine, and was almost constantly bedridden. He suffered the most acute pain, together with the loss of eyesight, with remarkable equanimity, till his death, which took place at Paris. His will expressed a desire that no religious ceremonies should be celebrated at his funeral. 'This,' however, he adds, 'is not the weak fancy of a freethinker. For the last four years, I have cast aside all philosophical pride, and have again felt the power of religious truth.' What faith is to be placed in this assertion, may easily be concluded from his subsequently designating the Deity as the 'mighty Aristophanes of Heaven,' who laughs at his calamities. Besides the works already mentioned, H. wrote *Französische Zustände*, *Der Salon*, *Shakspeare's Mädchen und Frauen*, *Neue Gedichte*, *Atta Troll*, *Romanzero*, etc. A complete edition of his works was published at Philadelphia by John Weik, 1856; another by Hoffmann Campe, Hamburg (1861-63). A French edition of his works (Michel Levy, Paris) was prepared, with his co-operation, by Loewe-Weimars, Gérard de Nerval, and St. René-Tailandier. English versions of some of these are Leland's translation of *The Pictures of Travel* (1856), *The Book of Songs*, by J. E. Wallis (1856), the *Poems* complete by E. A. Bowring (1859), and the *Poems and Ballads* by Theodore Martin (1879). See *Heinrich Heine*, by W. Stigand (1876).

HEINECCIUS, *hî-něk'tsê-ús*, JOHANN GOTTLIEB: 1681, Sep. 11—1741, Aug. 31; b. Eisenberg: German jurist. He studied theology at Leipsic, and law at Halle, where 1713 he was made prof. of philosophy, and 1720 prof. of law. He went as prof. of law to Franeker 1727, and to Frank-

HEINECKEN—HEINTZELMAN.

furt-on-the-Oder 1727, but 1733 returned, as prof. of law and philosophy, to Halle, where he died. His works are of a high order: *Antiquitatum Jus Romanum Illustrantium Syntagma*, was re-edited so lately as 1841 by Mühlenbruch; and *Elementa Juris Civilis secundum Ordinem Institutionum* (ed. by Biener, 1815); *Elementa Juris Civilis secundum Ordinem Pandectarum*, etc., are still studied by jurists. —H.'s son, JOHANN CHRISTIAN GOTTLIEB H. (1718–91, b. Halle), was long a prof. in the academy for young noblemen at Liegnitz, and edited a complete collection of his father's works (*H. Opera Omnia*, 9 vols. Geneva 1771). —H.'s brother, JOHANN MICHAELIS H. (1674–1722, b. Eisenberg), was a celebrated pulpit orator in Halle, and also the first who studied seals scientifically. He is remembered by his *De Veteribus Germanorum aliarumque Nationum Sigillis* (Leip. 1710; 2d edit. 1719), and by the work edited in conjunction with Leuckfeld, *Scriptores Rerum Germanicarum* (Frankf. 1707).

HEINECKEN, *hī'něk-kēn*, CHRISTIAN HEINRICH: 1721, Feb. 6—1725, June 22; b. Lübeck, Germany: remarkably precocious child. He was the son of a painter, spoke distinctly when 10 months old, had learned by heart the chief incidents in the Pentateuch when a year old, was proficient in sacred history when two, spoke French and Latin and was conversant with ancient and modern history and geography when three, and in his fourth year began studying church history and learning to write. He was invited to Copenhagen by the king of Denmark 1724, and on his return home his naturally delicate constitution gave way suddenly. His wonderful intellectual powers seem to have been well authenticated.

HEINOUS, a. *hā'nūs* [F. *haineux*—from *haïne*, malice, hate: OF. *hadir*, to hate: OF. *haīnos*, odious]: wicked in a high degree; hateful; atrocious. HEI'NOUSLY, ad. *-lī*. HEI'NOUSNESS, n. *-nēs*, wickedness; atrociousness.—SYN. of 'heinous': enormous; great; flagrant; excessive; aggravated; monstrous; flagitious; odious.

HEINTZELMAN, *hīnt'sēl-man*, SAMUEL PETER: 1805, Sep. 30—1880, May 1; b. Manheim, Lancaster co., Penn.: soldier. He graduated at the U. S. Milit Acad. 1826, served on the n. frontier and in the Seminole Indian war in Fla., was promoted capt. at the beginning of the Mexican war, brevetted maj. for gallantry in the battle of Huamantla 1847, Oct. 9; was in the Coyote and Yuma Indian campaigns in Cal. 1849–55, promoted maj. 1855, and was on frontier duty on the Rio Grande, in Tex., till the beginning of the civil war. In 1861, May, he was brevetted lieut.col., promoted col. 17th U. S. inf. and appointed brig.gen. of vols., and captured Alexandria, Va. He was wounded in the first battle of Bull Run; commanded the 2d army corps in the peninsular campaign, before Yorktown, and in the battle of Williamsburg; promoted maj.-gen. vols. 1862, May 5; commanded the 3d and 4th corps at Fair Oaks and in the seven days' fighting before Richmond, and the 22d corps at Chancellorsville and Gettys-

HEIR.

burg; commanded milit. depts. till close of war; and was mustered out of the vol. service 1865, Aug. He was brevetted brig. and maj.gen. U. S. A., and placed on the retired list as full maj.gen. by special act of congress 1869, Feb. 22.

HEIR, *n. är* [L. *hærēs*; OF. *heir* and *hoir*, an heir: comp. Gael. *oighre*, an heir—from *og*, young]: one who is entitled to anything after its present possessor: V. to inherit. HEIR'ESS, fem. of *heir*: a female heir when there are no male heirs to succeed. Where there are several females, all sisters, who are in that case equally entitled, they are sometimes called co-heiresses, but more properly *coparceners*, and in Scotland *heirs-portioners*. In *heraldry*, a woman is accounted an heiress if she has no brothers who leave issue. The husband of an heiress is entitled to bear her arms in an escutcheon of pretense, i.e., a small escutcheon in the centre of his paternal shield, and the children of an heiress may quarter her arms with their paternal coat. Neither practice is of very early introduction in heraldry. See MARSHALLING OF ARMS. HEIR'LESS, a. destitute of an heir. HEIR-FEMALE, the female heir connected through a female. HEIR-MALE, the male heir connected through a male. HEIR'SHIP, *n.* state or right of an heir. HEIRSHIP-MOVABLES, see HEIR-LOOM. HEIR-APPARENT, one who has unqualified right to the inheritance if he outlive the possessor. HEIR-PRESUMPTIVE, one who stands nearest in succession in default of an heir-apparent, i.e., one who may ultimately be displaced by a later-born child. HEIRS-PORTIONERS, in *Scotch law*, either two or more females, being sisters, or sisters and the children, male and female, of deceased sisters, who are entitled to succeed to heritable estate. HEIR-AT-LAW, one who succeeds to an estate by common law when there is no will, or near relative of deceased. In English law the term is never used in the loose sense which prevails in Scotland, as including both heirs, properly so called, and executors or next of kin. The moment a person dies leaving real estate in England, such real estate vests at once in the heir-at-law, whoever that may be, without any ceremony or formality being required. See SUCCESSION. *Note.*—A man's son or daughter is *heir-apparent*, but when he has no son or daughter, then his brother or cousin, etc., is *heir-presumptive*.

HEIR, *är*: at common law, a person who by right of birth succeeds to the real estate of his ancestor immediately after the latter's death; in civil law, a person who succeeds to the rights and occupies the place of a deceased person. In practice the word is not used as applying to personal estate, for this kind of property usually is distributed by an administrator or executor among the next of kin, while real property passes direct to the H. upon the death of the ancestor without any formality of transfer. In some states, however, the civil law authorizes the H. to administer both the personal and the real estates. A further difference between the common and the civil laws is seen in local statutes which designate by H. all persons who are

HEIR—HEIRLOOM.

called to the succession, whether by the act of the ancestor or by the operation of law. While the English law recognizes the eldest son and his descendants as first claimants to property, and where there are only daughters gives each an equal share, the laws of the United States express no preference for one child above all others. Unless otherwise provided by will of the ancestor or by law of the state, all children have an equal right to the inheritance. Some states have statutes prohibiting a testator with natural heirs devising more than half of his property to charitable corporations; others have established a line of descent, specifying the relatives by blood and marriage who may inherit and their respective order. No person is legally the H. of a living person. An *H.-apparent* or *H.-presumptive* is the person who will become the H. on the death of the ancestor; *H.-collateral*, one beyond the direct line of inheritance, as brother, sister, nephew, niece, etc.; *H.-conventional*, one who succeeds in consequence of a contract, like that of marriage; *H.-irregular*, one who has no testamentary nor legal right of succession, but who succeeds by virtue of an award of court; *H.-testamentary*, one who becomes H. by a legally-executed will; *H.-legal*, one of the same blood, to whom the law gives the succession without qualification, such as (1) children and other lawful descendants; (2) fathers and mothers and other lawful ascendants; (3) collateral kindred: and an *H.-beneficiary*, one who accepts succession under the benefit of an inventory which relieves him of responsibility for debts beyond the value of the inheritance. In the United States all property of an heirless intestate goes to the state.

HEIR, in Scotch Law: term often used in a loose sense to denote the persons entitled to succeed to the heritable as well as to the movable estate. The word 'heir' is often distinguished into several kinds. Thus, an *heir by destination* is a person pointed out by a certain deed to succeed in a certain order. So is an *heir of provision*. An heir-at-law is also often called an *heir of line*, because he succeeds according to a certain line or order; and an *heir-general* because he is the general representative of the ancestor, in contradistinction to an heir special, who is pointed out by deed. An *heir of entail* is the person who succeeds to an entailed estate by virtue of the deed of entail, which prescribes the order of succession. An *heir of conquest* meant the heir of an ancestor who acquired the estate in question by purchase, and not by succession. See SUCCESSION.

HEIR AND EXECUTOR: short phrase to denote that branch of the law in which a leading distinction is made between the two kinds of property left by a deceased person, viz., real and personal. All a man's property falls under one or other of these heads. If real, it goes to the heir-at-law; if personal, it goes to the executors or administrators, often called the personal representatives.

HEIR'LOOM [A. S. *geloma*, goods], in Law: certain chattels which go to the heir-at-law by special custom, and have already come through several descents. The chattels

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included are the best of everything, as pots, pans, tables, etc. But the right is obscure. The word is more frequently used now to designate some chattel which a testator has bequeathed to the person, whoever he may be, who is to take the real estate. In Scotland, a somewhat similar, but by no means identical, phrase is used—viz., *heirship movables*, which is a wider right, and includes the best articles of furniture in the house of a person who left heritable property. The extent of this right also is not clearly settled.

HEISS, *hīss*, MICHAEL, D.D. : 1818, Apr. 12—1890, Mar. 16; b. Bavaria: Rom. Cath. abp. He studied law and theol. in the Univ. of Munich and the Theol. Seminary in Eichstadt; was ordained priest 1840, Oct. 18; came to the United States 1842, engaged in missionary work and became sec. to Bp. Henni in Milwaukee, built the first Rom. Cath. parochial church and the first brick church edifice in Milwaukee, was appointed first rector of the Seminary of St. Francis de Sales, and consecrated bp. of La Crosse 1868, Sep. 6. He had charge of this diocese 12 years; was nominated coadjutor to Abp. Henni of Milwaukee, with right of succession, 1880, Mar. 14; and became metropolitan of the archdiocese 1881, Sep. He was theologian in the Baltimore council 1849, St. Louis 1855, and Baltimore (plenary) 1866, and an active member of the Vatican council 1869–70.

HEL, *hēl*: in Norse mythology, the goddess of the dead, who dwelt beneath one of the three roots of the sacred ash Yggdrasil; was the daughter of the evil-hearted Lok (q.v.), by the giantess Angurboda. Hel (with her brothers, the wolf Fenrir and the serpent Jormundgand) was bred up in the giant's home of Jötunheim, where she remained, till at the request of the Æsir, or gods, the All-father sent for her and her brothers; when, knowing that by their origin these children must prove a great source of calamity, he resolved upon their destruction, and after casting the serpent into the deep ocean, which surrounds all lands, and where it has grown so that it encircles the whole world, and bites its own tail, he hurled Hel into Niflheim (q.v.), over which he gave her authority, and in which she was to assign places to all who die of sickness and age. Her vast abode is surrounded by a high inclosure with massive gates. Her dwelling is *Elindnir*, dark clouds; her dish, *Hungr*, hunger; her knife, *Sullt*, starvation; her servants, *Ganglāti*, slow-moving; her bed, *Kör*, sickness; and her curtains, *Blikiandaböl*, splendid misery. She is easily recognized by her fierce aspect and her half-black, half flesh-colored skin. Hel was inexorable, and would release no one who had once entered her domain: see BALDER. After the introduction and diffusion of Christianity, the ideas personified in Hel gradually merged, among all the races of northern and German descent, in the local conception of a hell (q.v.; see also HADES) or dark abode of the dead; though belief in the goddess H. is not entirely extinct among the ignorant: Hel-shoon are still

HELAMYS—HELEN.

sometimes put on the feet of the dead, and it is thought that Hel's dog may be heard to bark in warning of the approach of death. See Thorpe's *Northern Mythology*, Grimm's *Mythologie*.

HELAMYS, n. *hē'la-mīs* [Gr. *hellos*, a fawn; *mus*, a mouse]: the jumping hare or jumping mouse, genus of rodent animals allied to the jerboas. It is about the size of a hare and advances by leaps and bounds, sometimes jumping 20 or 30 ft. at a bound. It damages the green and ripe grain crops adjacent to the mountains where it lives. It is called also Pedetes.

HELARCTOS, n. *hēl-ārkt'ōs* [Gr. *hēlios*, the sun; *arktos*, a bear]: sunbear; genus of *Ursidae* (bears). They have smooth glossy hair, feed chiefly on honey or the young shoots of the cocoanut tree, and are milder in their disposition than the more typical members of the family.

HELCOLOGY, n. *hēl-kōl'o-jī* [Gr. *helkos*, a wound, an ulcer; *logos*, discourse]: the branch of medical science which treats of ulcers.

HELCOPLASTY, n. *hēl-ko-plās'tī* [Gr. *helkos*, a wound, an ulcer; *plastos*, formed, molded]: in *surg.*, the process of replacing the epidermic integument, destroyed by an ulcer, by transferring to the injured spot a piece of skin from the corresponding part of the person or of some other person.

HELD, v. *hēld*: pt. or pp. of HOLD, which see.

HELDER, *hēl dēr*: thriving seaport and strongly fortified town, province of Holland, Netherlands; on the *Marsdiep*, which unites the Zuider Zee and the German Ocean, and separates N. Holland from Texel. It is 45 m. n.n.w. of Amsterdam, with which it is connected by the Grand Ship Canal: see AMSTERDAM. H. is protected from the inroads of the sea by an enormous dike, six m. in length, 40 ft. broad at the top, on which there is a good road, and which presents to the sea a sloping side of 200 ft. inclined at an angle of 40°. This dike is built entirely of huge blocks of Norwegian granite. Here alone, along the whole coast, is deep water found close to the shore, a fact accounted for by the rush or 'race' of the tide, whose violence allows no sand to accumulate. Fort Kykduin is surmounted by a tower and light-house. The harbor, well sheltered by the dike, can easily contain 300 large vessels. Pop. (1880) 19,680; (1891) 23,145; (1900) 26,075.

HELE, or HELL, v. *hēl* [AS. *hēlan*, to conceal]: in *old* and *prov. Eng.*, to cover; to conceal; to hide. HEL'ING, imp. HELED, pp. *hēld*. HELLIER, n. *hēl'ī-ēr*, in *OE.*, a coverer of houses; a thatcher or tiler; a slater,

HELEN, *hēl'en*, or HELENA, *hēl'en-a*, in Greek Legend: daughter of Zeus and of Leda, wife of Tyndareus, King of Sparta. According to the ancient legend, she was so exceedingly beautiful, that at the age of ten she was carried off by Theseus and Pirithous, but was recovered subsequently by her brothers, Castor and Pollux. Tyndareus afterward engaged her suitors, who numbered about 30, by a solemn oath, to unite together to aid the husband

HELENA.

whom H. should choose, in case of any attempts being again made to carry her off. In accordance with this oath, her husband Menelaus, when she was afterward carried off by Paris, son of Priam, King of Troy, summoned all the princes of Greece to avenge his injury, and thus gave rise to the Trojan war. The stories concerning the fate of H. are inexhaustible. The ordinary legend states that after the death of Paris she voluntarily married his brother Deiphobus, and that on the taking of Troy, in order to recover the favor of Menelaus, she betrayed Deiphobus into his hands. On the fall of Troy, she returned with Menelaus to Sparta, but after his death was driven from the country, and, having gone to Rhodes, was there murdered by the queen of the island. By her husband Menelaus, she had one daughter, Hermione. In the Homeric poems, H. appears as one compelled by the gods to take a course for which she has no liking; thus she is held in some sense apart from the wrong that she does. The H. of Greek legend appears to have been developed from a more ancient H. who was worshipped as a moon-goddess. Greek artists have represented her in their works as the prototype of female beauty, and she has frequently been celebrated by the tragedians in their dramatic works. See Gladstone's *Homeric Studies*.

HELENA, n. *hěl' ě-na*: old Roman name still current among Italian sailors for a single light appearing to sailors. It was thought by them to be unfavorable, while a double one called Castor and Pollux was thought propitious. These lights are varieties of St. Elmo's fire.

HELENA, *hěl-ĕ'na* or *hěl' ě-na*: town, cap. of Phillips co., Ark.; on the Mississippi river and on the Arkansas Midland and Iron Mountain and the H. railroads; 80 m. s. of Memphis. It contains the co. court-house, Southland College, 10 churches, 2 cotton-seed-oil mills, 1 national bank (cap. \$100,000), 1 state bank (cap. \$30,000), and 1 private. Pop. (1870) 2,249; (1880) 3,652; (1900) 5,550.

HELENA: city, cap. of Mont. and of Lewis and Clarke co.; on the N. Pacific, the Utah Northern, and the Manitoba and Montana Central railroads, midway between the Rocky Mts. and the Missouri river; 100 m. s.w. of Fort Benton. It was founded by miners 1864; destroyed by fire 1867. 72, and 74; and incorporated with area of 9 sq. m. 1881. Contained 1890, Mar., 2 nat. banks (cap. \$450,000) and 1 state bank (cap. \$100,000); U. S. assay office (output 1887-8, \$1,344,094); 3 water-work plants (cost \$600,000); gas and electric lighting plants; 2 hospitals (Rom. Cath. and Prot. Episc.); 3 libraries; 3 daily and several weekly newspapers; Rom. Cath. reformatory; court-house of native granite and sandstone (cost \$200,000); a number of public parks; several churches and public schools; 2 business colleges, one of which is also a normal training school; St. Vincent's Acad. for Girls (Rom. Cath.), St. Aloysius parochial school (Rom. Cath.), and a parish school (Prot. Episc.); 9 hotels; and foundries, machine-shops, planing-mills, and carriage, harness, and

HELENA—HELENSBURGH.

other factories. The assessed valuation of the city (1901) was \$10,237,471, of the co. \$11,000,000; \$3,055,000 were invested in new buildings and local improvements 1888. Pop. (1880) 3,624; (1900) 10,770.

HELE'NA, St.: island in the Atlantic; lat. 15° 55' s., long. 5° 44' w.; greatest length 10½ m., breadth 7 m.; 47 sq. m.; 850 m. from the nearest land, Ascension Island; nearly 1,000 m. w. from the nearest point of the African continent. It was discovered 1501, May 21 (St. Helena's Day), by the Portuguese navigator Juan de Nova Castella; afterward became a Dutch possession; was ceded by Holland about the middle of the 17th c. to the English E. India Company; and by it made over to the British crown 1833. Its chief value was as a halting-place on the homeward voyage from India. Its loneliness and inaccessibility led to its being selected for the residence of Napoleon Bonaparte, who lived there in captivity 1815–21. It has one good inlet and harbor, James's Bay, and one town of note, James's Town. The coast has naturally scarped faces of cliff 600–1,200 ft. high, and the mouths of ravines are protected by forts. About 6,000 acres—one-fifth the entire surface—are cultivable, but not more than 500 are under tillage. There are several plains on the island, the largest of which is Longwood, where stands the house in which Napoleon lived. Supplies of provisions, properly so called, are mostly imported. Pop. (1891) 4,116.

HEL'ENA, SAINT: empress, wife of Constantius Chlorus, and mother of Constantine the Great: b., according to one account, in Bithynia; but the English Church historians commonly claim her as a native of Britain, which opinion has some probability from the fact that her first-born son, Emperor Constantine, was born in Britain. She died 328 (or 326). She became a Christian during the youth of Constantine, and it is thought not unlikely that her example and her teaching co-operated with public motives in determining him to embrace the Christian religion. It was not, however, till after the defeat of Maxentius that H., far advanced in years, formally received baptism. She was zealous for the advancement of religion, and was canonized for acts of piety and munificence. Rom. Cath. historians record her discovery of the holy sepulchre, and of the cross of the Lord Jesus (see **HOLY PLACES**).—Two other royal or princely ladies named **HELENA** are honored as saints: the first, in high repute in the Russian Church, was the wife of the Grand Duke Igor, and, at her baptism in Constantinople (955), changed her original name, Olga, into Helena; the other, of the 12th c., was a native of Skofde, West Gothland.

HELENINE, n. *hěl'ě-nĭn* [L. *helēnĭum*, the plant elecampane—so called because supposed to have sprung from the tears of Helen]: a substance like camphor, obtained from the plant elecampane.

HELENSBURGH, *hěl'ěnz-bŭr-rŭh*: growing town and favorite watering-place of Scotland, Dumbarton co.; on the right bank of the Firth of Clyde, opposite Greenock

HELIACAL—HELICON.

(four m. distant) and 23 m. w.n.w of Glasgow by railway. It was founded 1777 by Sir James Colquhoun, and named after his wife Helen. Pop. (1871) 5,975; (1881) 7,693; but in summer the numbers are doubled; (1901) 10,000.

HELIACAL, a. *hě-lĩ-ă-kăl* [Gr. *heliakōs*, belonging to the sun—from *hēlios*, the sun]: emerging from the light of the sun, or passing into it, as a star or planet. **HELIACALLY**, ad. -*lĩ*. **HELIACAL RISING**, rising of a star, just before the sun. When the sun approaches a star near the ecliptic, the star becomes for a season invisible—the heavens being too bright in the quarters of sunrise and sunset, at the times of its rising and setting, to allow it to be seen. But when the sun, advancing in its orbit, separates from the star, and the latter begins to rise first, it in time rises so much earlier than the sun, as to be visible before daylight. **HELIANTHUS**, n. *hě-lĩ-ăn-thūs* [Gr. *anthos*, a flower]: a genus of plants of several species, one of which is the well-known sun-flower (see JERUSALEM ARTICHOKE! SUNFLOWER). **HEL'IANTHOI'DA**, n. -*thoy'dă* [Gr. *anthos*, a flower; *eidos*, form, shape]: an order of polyps, resembling a sunflower in appearance, of which the actinæ or sea-anemones may be taken as the type.

HELICAL, a. *hě-lĩ-kăl* [Gr. *helix* or *helika*, a winding, a spiral body]: winding. **HEL'ICALLY**, ad. -*lĩ*: **HEL'ISPHER'IC**, a. -*sfĩr'ik* [Gr. *sphaira*, a globe or ball]: spiral or winding; also **HEL'ISPHER'ICAL**, a. -*ĩ-kăl*. **HELICIDÆ**, n. plu. *hě-lĩs'ĩ-dě*, large family of gasteropodous mollusks, of the order *Pulmonata*, and of which snails (q.v.) are familiar examples. The order is distinguished by having part of the mantle cavity formed into an air-sac or lung. The H. are land mollusks. They have a spiral shell, into which the body of the animal can be withdrawn. Most of the species resemble the common snails in their habits, feeding on vegetable substances of various kinds, and often giving trouble to the farmer and gardener. **HEL'IOCERAS**, n. *ĩ-ōs'ěr-ăs*, or **HEL'IOCER'ATITE**, n. *ō-sěr'ă-tĩt* [Gr. *keras*, a horn]: a genus of the ammonite family—so named from the spiral arrangement of its chambered whorls. **HEL'ICOID**, n. -*kōyď* [Gr. *eidos*, form]: a peculiar curve or spiral. **HEL'ICOI'DAL**, a. -*kōy'dăl*, in bot., having a coiled appearance like the shell of a snail—applied to inflorescence. **HELIX**, n. *hě-l'iks*, **HEL'ICES**, n. plu. -*ĩ-sěz*, something that is spiral; the external body of the ear; the snail-shell; in arch., a flight of steps winding spirally around a cylindrical space or centre-post. The delicate volute, like the tendril of a vine, which curls over the leaves, and just beneath the abacus, of a Corinthian capital. **HEL'ICITE**, n. -*ĩ sīt*, in geol., any fossil shell of the helix family.

HELICINE, a. *hě-lĩ-sĩn* [Gr. *helix*, the tendril of the vine or that of ivy]: of, belonging to, or resembling a tendril; not confined to botanical descriptions, for in anatomy there are helicine arteries.

HELICON, n. *hě-l'ĩ kōn*: mountain, or rather mountain-range in the s.w. of the province of Bœotia, in Greece; continuation of the range of Parnassus. It was celebrated

HELIGOLAND.

by ancient poets as the favorite seat of the Muses. The loftiest summit (now called Paleovúvi) is about 5,000 ft. high. At the bottom of H. stood the village of Ascrea, the residence of Hesiod, and the seat of the earliest school of poetry in Greece. In ascending the mountain from Ascrea (now Pyrgáki), the traveller passes the famous fountain of Aganippe, the waters of which were fabled to bestow inspiration. The Grove of the Muses is supposed to have been situated in a hollow at the foot of Mount Mirandáli, one of the summits of Helicon. Leake considers that its site is now occupied by the church and convent of St. Nicholas. Twenty stadia above this was the fountain of Hippocrene, probably the modern Makariotissa, where there is still a fine spring.

HELIGOLAND, *hēl'i-gō-lānd* (Ger. *Helgoland*; native name, *Hellige Land*, 'Holy Land'): island in the North Sea, belonging to Gt. Brit. till 1890; about 40 m. n.w. of the mouth of the Elbe, lat. 54° 11' n., and long. 7° 51' e. It is about a mile long from n. to s., and one-third of a mile e. to w., and one-fifth of a sq. m. in area. The *Oberland* is a rock 200 ft. in height, on which stands a town of 350 houses; while the *Unterland* is a patch of shore with 70 houses s.e. of the cliff, and communicating with it by a flight of 196 steps. Pop. about 2,000; though in the bathing season H. is visited by about 2,000 summer visitors—mainly Hamburgers, attracted by the admirable bathing facilities offered by the 'Sand Island,' or *Dune*, a small sandbank covered with scrubby vegetation, and separated from the main island by a channel about a quarter of a mile wide. The Sand Island was formerly connected with the other by land, but the inroads of the sea, 1720, isolated it, and are steadily reducing its size. The soil on the flat top of the rock of H. suffices for a little pasture land, a few potato patches and cabbage gardens. There are some sheep on the island, but no horses; one or two cows are brought in summer. Wheelbarrows are the only wheeled vehicles. The spit of the Unterland, on which are two or three trees, gives partial shelter to two harbors, one to the north, the other to the south. The inhabitants are supported chiefly by fishing, by serving as pilots, and by the summer visitors. A lighthouse stands on the cliff near the village. The island, taken by the English from the Danes 1807, and formally ceded to England 1814, has an English governor, but the internal affairs are managed by a council of the islanders. There is an annual sitting of an island parliament, at which every householder may speak. The laws are the old Frisian code. Frisian is the native tongue, but German is currently spoken. The place was once regarded as of great military importance, and was fortified with four batteries. These are not now, however, maintained in efficiency, nor is there any garrison. Steamboats ply between H. and Hamburg.—H. was anciently sacred to the goddess Hertha. According to tradition, for which, however, no historic proof is available, H. was once vastly larger, great tracts of country having been swallowed up by the sea between

HELIOCENTRIC—HELIOMETER.

A.D. 700 and the end of the 17th c. Christianity was preached here first by St. Willibrod, 7th c., after whose time the island received its present name. The inhabitants of H. are divided into two classes, fishermen and merchants. The first are Frisians, simple and primitive in habits, and holding land-labor in contempt; and the merchant class consists of immigrants from the German mainland and their descendants. H. was officially transferred by Great Britain to Germany 1890, Aug. 9, in accordance with the Anglo-German agreement concerning the division of territory in Africa (q.v.).

HELIOCENTRIC, a. *hē'li-ō-sēn'trĭk* [Gr. *hēlios*, the sun; *kentron*, centre]: concentric with the sun; having the sun as the centre; opposed to *geocentric*, which takes the earth as the centre of reference or view; also **HE'LIOCEN'TRICAL**, a. *-trĭ-kāl*. **HE'LIOCEN'TRICALLY**, ad. *-lĭ*.

HELIOCHROME, n. *hē'li-o-krōm* [Gr. *hēlios*, the sun; *chrōma*, color]: name given by Niépce de St. Victor to the products of his process for photographing in the natural colors; a photograph in colors.

HELIODORUS, *hē-li-o-dō'rŭs*: earliest and best of the Greek romance writers: b. at Emesa, in Syria; son of Theodosius. The church historian Socrates says he became a Christian, and was Bp. of Triikka, in Thessaly, about the end of the 4th c. Some scholars now deem it more probable that the romance writer was a Neo-Pythagorean sophist of the 3d c. The work by which he is known is entitled *Æthiopica*, the oldest work of the kind extant. It extends to ten books, and narrates in poetic prose, at times with almost epic beauty and simplicity, the loves of Theagenes and Charicleia. The work, though full of improbable scenes and incidents, is distinguished from the later Greek romances by its vigor. See Rohde, *Der Griechische Roman* (1876). There are editions by Korais (1805), Bekker (1855), and Hirschig (1856).

HELIOGAB'ALUS: see **ELAGABALUS**.

HELIOGRAPH, n. *hē'li-ō-grāf* [Gr. *hēlios*, the sun; *graphō*, I describe or paint]: an instrument devised for obtaining photographs of the sun; a sun telegraph; a photograph (see **HELIOTROPE** — **HELIOSTAT** — **HELIOGRAPH**). **HE'LIOG'RAPHY**, n. *-ōg'rā-fĭ*, a description of the sun; the art of fixing images of objects by means of photography. **HE'LIOGRAPH'IC**, a. *-ō-grāf'ĭk*, pertaining to. **HE'LIOG'RAPHER**, n. *-ōg'rā-fēr*, one who.

HELIOLATRY, n. *hē'li-ōl'ă-trĭ* [Gr. *hēlios*, the sun; *latreio*, I worship]: the worship of the sun. **HE'LIOL'ATER**, n. *-tēr*, one who worships the sun.

HELIOLITES, n. plu. *hē'li-ō-lĭtz* [Gr. *hēlios*, the sun; *lithos*, a stone]: an extensive genus of fossil corals—so called from the sun-like aspect of the septa of their pores.

HELIOMETER, n. *hē'li-ōm'ĕ-tēr* [Gr. *hēlios*, the sun; *metron*, a measure]: instrument invented by Bouguer 1747, by means of which the diameters of the heavenly bodies can be measured with great accuracy; called also an *astrometer*.

HELIOPOLIS—HELIOSCOPE.

As improved by Dollond, the object-lens of the instrument is in two halves, each of which will form a perfect image in the focus of the eye-piece; and the images may be made to diverge, coincide, or overlap each other, by varying the distances between the half-lenses. If the diameter of the sun is to be measured, the two lenses are adjusted so that the images may touch each other, then the distances between the centres of the two object-glasses measured in seconds gives the diameter of the sun. Fraunhofer has made many remarkable improvements on the H.

HELIOPOLIS, *hē-lī-ōp'o-līs* (*City of the Sun*): Greek name of the city called by the Egyptians On, on the east side of the Pelusiac branch of the Nile, near the apex of the Delta; one of the most ancient and important Egyptian cities. Here were the headquarters of the wisdom of the Egyptians. From the priests of H., Solon, Thales, and Plato are reported to have learnt. Manethon, the historiographer of Egypt, was chief-priest of H., an office filled centuries earlier by the father-in-law of the Hebrew Joseph. The ruins of H. still cover an area nearly three m. square. One of the red granite obelisks long famous as Pharaoh's needles, is still standing near the hamlet of Matarich. There is reason to suppose that the obelisk called 'Cleopatra's needle,' lately taken to England, had originally been brought to Alexandria from Heliopolis.

HELIOPOLIS SYRIÆ: see BAALBEK.

HELIOS, *hē'li-os*: Greek name of the sun (Roman *Sol*), worshipped as a god. He was, according to Homer, son of the Titan Hyperion, and of Theia or Euryphaëssa, and is described by the same poet as giving light both to gods and to men. He rises in the e. from the marshy borders of Oceanus, into whose dark abysses in the w. he also sinks at evening. The later poets, however, gave him a splendid palace in the east, somewhere below Colchis, and describe him as being conveyed, after the termination of the burning labors of the day, in a winged boat of gold, along the n. coasts of the sea back to Colchis. After the time of Æschylus, he began to be identified with Apollo or Phœbus, but the identification was never fully carried out. His worship was widely spread. He had temples in Corinth, Argos, Trœzen, Elis, and many other cities, but his principal seat was Rhodes, where a four-team was annually sacrificed to him. In addition, it was customary to offer white lambs or boars on his altars. The animals sacred to him were horses, wolves, cocks, and eagles. Sculpture represents him, usually, riding in his chariot, drawn by four horses.

HELIOSCENE, n. *hē'li-ō-sēn* [Gr. *hēliōs*, the sun; L. *scēna*; Gr. *skēnē*, the scenes of a theatre]: a sun blind or screen placed over a window outside to hinder the sun's rays unduly heating the glass.

HELIOSCOPE, n. *hē'li-ō-skōp* [Gr. *hēliōs*, the sun; *skōpēō*, I view]: a telescope fitted for solar observations. HELIOSCOPIC, a. *-skōp'ik*, pertaining to. HE'LIOSTAT, n. *-stāt* [Gr. *stātōs*, that stands or remains]: an instrument which continually reflects the sun's rays in the same direction,

HELIOTROPE, HELIOSTAT, HELIOGRAPH.

consisting of a rotating mirror moved by clock-work: see EQUATORIAL. For a different instrument, see HELIOTROPE—HELIOSTAT—HELIOGRAPH.

HELIOTROPE, *n.* *hē' lī-ō-trōp* [Gr. *hēlios*, the sun; *trōpē*, a turning]: that which turns toward the sun; an anc. instrument for showing the time of the sun's arrival at the tropics or equinoctial line (for another instrument, see below): a popular garden and window flowering plant; the turnsole or sunflower, of the genus *Heliotropium* (see below): a mineral of a deep green; blood-stone (see below). HE'LIOTROP'IC, *a.* *-trōp'ik*, having the property of always turning its leaves and flowers toward the sun. HE'LIOTROPISM, *n.* *-ōt'rō-pizm*, movements of leaves or flowers toward the sun. HELIOTROPIC CURVATURES, the movements which certain plants, like the sun-flower, perform under the influence of the sun; the periodical movements of organs, etc., in plants.

HELIOTROPE, *hē' lī-ō-trōp* (*Heliotropium*): genus of plants of nat. ord. *Boraginæ* (q. v.); of the section, sometimes made a distinct order, *Ehretiaceæ*, the fruit separating only when ripe into four carpels. Many of the species have fragrant flowers. The PERUVIAN H. (*H. Peruvianum*), a small shrub, seldom more than two ft. high, with oblong-lanceolate leaves, and small lilac-blue flowers, is in almost universal cultivation for its fragrance, which resembles that of vanilla. The EUROPEAN or COMMON H. (*H. Europæum*), native of s. and w. Europe, is an annual with small white, or rarely pale red, flowers. Important healing powers were once erroneously ascribed to it in cases of cancerous and scrofulous sores; it is, however, astringent and mucilaginous. Many hybrid heliotropes are seen in flower-gardens and green-houses. They delight in a rich, light soil. The shrubby kinds are generally propagated by cuttings. Large quantities of the flowers are used by perfumers for making scents.—Classical fable accounts for the name H. [Gr. *helios*, the sun, *trōpē*, a turning], by representing Clytia as turned into this flower through gazing at Apollo.

HE'LIOTROPE, or BLOODSTONE: variety of chalcedony or of jasper, of green color with red spots. The finest heliotropes consist of chalcedony, and are translucent, at least at the edges; the jasper bloodstones are opaque. H. is found in many parts of the world, but the finest specimens are from s. Asia. It was well known to the ancients, who obtained it chiefly from Ethiopia and Cyprus. It is much used for boxes, seals, etc.: and those specimens are most valued in which the ground color is beautiful, and the spots bright and well distributed. It was often used in the early ages of the Christian Church for the engraving of sacred subjects, the figures being so managed that the red spots should represent drops of blood. Different accounts are given of the origin of the name Heliotrope.

HE'LIOTROPE—HELIOSTAT, *hē' lī-ō-stăt*—HELIOGRAPH, *hē' lī-ō grăf*: instruments used by surveyors for rendering distant stations distinctly visible. This is managed by placing a mirror at the distant station, and adjust-

HELIOTYPE—HELIOTYPOGRAPHY.

ing it so that a particular hour of the day (arranged beforehand), the light of the sun shall be reflected from the mirror directly to the surveyor's station. The surveyor must make his observation almost at the instant he sees the glancing of the mirror, as the constant change of the sun's position in the heavens produces a corresponding change in the direction of the rays reflected by the mirror. Gauss (q.v.), invented such an instrument about 1821, used especially in America, for geodetic surveys. Of late, instruments of this kind, called heliotrope, heliostat, or heliograph, have been so perfectly contrived as to be available at a distance of more than 190 m. (in California). French engineers in Algeria have found the signals serviceable 170 m. Recently there has been great development in heliography, or sun-telegraphy, for signalling messages between the sections of an army in the field, as during the British campaign in Afghanistan 1880. Drummond's and Begbie's heliostats, and the heliographs (differing in details) of Mance and Anderson, are favorably known. The name heliostat was originally used of an Equatorial (q.v.) revolving on its polar axis.

HELIOTYPE, n. *hē'li-ō-tīp* [Gr. *hēlios*, the sun; *typos*, type, form]: a sun-picture or photograph.

HELIOTYPOGRAPHY, *hē-li-ō-tī-pōg'ra-fī* (otherwise *Photoheliography*): art or process of photographic representation of the sun's disk. Mr. De la Rue, in the Observatory of Kew, near London, has produced, on sheets of paper, pictures in which the solar spots are represented without the aid of drawing or engraving of any kind. In one form of operation (noticed in *Proceedings* of the Royal Astronomical Society), the sun's spots were viewed through a Newtonian reflector of 18-inch diameter, and 10 ft. focal length, producing an image that would have made the sun's disk three ft. diameter. By a nice adjustment, the image of a portion of the disk was received on a glass-plate rendered sensitive by collodion. The first part of the process was then complete—the sun painting a picture of its own spots on a piece of glass. Then came the transfer of this negative to a positive, by the usual photographic means of printing, but with a varnish of very complex chemical nature on the positive plate. This completed the second stage—photography producing a very faint picture on the positive plate. Then came chemistry: by dissolving away certain constituents of the varnish, which had been more affected than the rest by the actinic force of the sun's light, the surface of the positive plate became a series of ridges and hollows, *relievi* and *intaglie*, extremely minute in their differences of level, but still sufficiently marked to convey the notion of a kind of engraving. Next came electrotype or galvanography. The plate, in the state thus described, served as a matrix or foundation on which an electrotype cast could be taken. By Pretsch's process, this cast may be so varied as to be available either for surface-printing or for printing on the copper-plate plan. Other solar phenomena, such as the corona, and the appearance presented during

HELISPHERIC—HELL.

annular and total eclipses, have been reproduced in a similar way. See GALVANISM (Electrotype): PHOTOGRAPHIC ENGRAVING: PHOTOGRAPHY.

HELISPHERIC, etc.: see under HELICAL.

HELIUM, n. *hē'lī-ŭm* [Gr. *hēlios*, the sun]: a hypothetical elementary body existing in the sun, but not on the earth.

HELIX, HELICES: see under HELICAL.

HELL, n. *hěl* [Icel. *hel*, death; *Hēliä*, the goddess of death: Dan. *helvede*, hell: AS. *helan*; Ger. *hehlen*, to hide—*lit.*, the hidden or unseen place, the hole beneath our feet (see HELE, or HELL)]: the place or state of punishment after death; the place of departed souls; any den of vice or misery; hades; the grave; a gambling-house. HEL'lish, adj. -*ish*, pertaining to hell; infernal. HEL'lish-ly, adv. -*ly*. HEL'lishness, n. the qualities of hell; extreme wickedness or malignity. HELL-BROTH, any compound made for hellish purposes. HELL-HOUND, an agent of hell; a diabolical savage. GATES OF HELL, the power and influence of Satan and his demons. DESCENDED INTO HELL, into the place of the dead, properly *hades*.

HELL (Heb. *Sheol*, Gr. *Hades*, Sax. *Hell*, Ger. *Hölle* (see HEL: HELE, or HELL), originally a cavern or deep and dark abyss]: term used in various significations: often applied in the English translation of the Bible of 1611 (as Gen. xxxvii. 35; Job xiv. 13) to the grave, or to death, or as the equivalent of HADES (q.v.); but in strict usage denoting the place, or the condition after death, of the souls of those who, having failed during life to fulfil the essential obligations imposed by the natural or the positive divine law, are consigned to a state of punishment. It should be noted that when the King James's translation was made, the word Hell had not taken that definiteness of meaning as the place or state of the finally lost which it now bears in common usage. With the same unanimity which has existed as to a state of reward after death (see HEAVEN), almost all religions, ancient or modern, number among their most prominent doctrines the belief of a state of punishment after death—the nature of which is variously modified according to the peculiar tenets of each religion—for unexpiated guilt. Among early Christian writers, the word hell is variously employed, sometimes to signify a place of temporary purgation, in which sense it comprehends the Rom. Cath. Purgatory (q.v.); sometimes the place (*Limbus Patrum*) in which the souls of the just of the old law awaited the coming of Christ, who was to complete their felicity; sometimes the place in which unbaptized children are believed to be detained, on account of the stains of unremitted original sin; and lastly, the prison of those who die stained with the personal guilt of grievous sin. Many controversies out of place here, have arisen about the details of this doctrine, as to the place, the nature, and the duration of the punishment of hell. It will be enough to say that, though according to the literal sense of more than one passage of Scripture, and the popular notions of the various Christian communi-

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ties, the place of hell would seem to be assigned to the interior abysses of the earth, or to the depths of the intermundane spaces, yet even the formularies of the Rom. Cath. Church, with all their rigorous precision of detail, and still more those of other communions, have abstained from any formal declaration as to the locality of the punishment of the damned. As to the nature of the punishment to which they are subjected, whether it is confined to the 'pain of loss'—that is, to the remorseful consciousness of having forfeited the presence of God, and the happiness of heaven—or whether and to what degree it further includes the 'pain of sense,' there is some difference between the Eastern and the Western churches, and it is sometimes alleged that the Eastern Church altogether rejects the idea of punishment of sense. This, however, is a mistake; both churches agree that the punishment of hell includes the 'pain of sense,' the controversy between them having regarded not the existence of the pain of sense, but certain questions as to its nature, and especially whether it consists in material fire, a point which, in the decree for the union of the Greek and Latin churches at the council of Florence, was left undecided. Scarcely any Protestants now hold to the theory of a material fire in the future world.—The controversy on the subject of the eternity of the punishment of hell dates from an early period, Origen and his school having taught that the punishment of hell was but purgatorial in its object; that its purifying effect having once been attained, the punishment would cease for all, even for the devils themselves; and that its duration in each case is proportioned to the guilt of the individual. This doctrine of the final restoration of all to the enjoyment of happiness, was the well-known Origenistic theory of the *apocatastasis*, to which so many of the early writers refer. It was rejected, however, by the common judgment of antiquity, and was formally condemned by the second council of Constantinople—a condemnation founded on the literal sense of many passages of the Scripture (see Matt. xviii. 8; xxv. 41, 46; Mark ix. 43; Luke iii. 7; II Thess. i. 9; Rev. xx. 10, etc.); and in the controversies between the Eastern and Western churches, on the subject of the punishments of hell, the belief of their eternity, in the strict sense of the word, was recognized as a common doctrine of both. In the New Testament, the name *Gehenna* is frequently used to designate the place of punishment of the damned (see Matt. v. 22, 29, 30; x. 28; xviii. 9; xxii. 13; Mark ix. 43; Luke xii. 5; James iii. 6). The word *Gehenna*, indeed, unlike the Hebrew *Sheol* and the Greek *Hades*, is never found in any other signification than that of the place of punishment of the sinner after death: thus it denotes the idea which has come to be associated with the word hell in modern theology.—See **Hades**.

HELLAS, *hèl'las*: the original home of the Hellenes, or Greeks, according to the received opinion, was first a town; afterward, under the name Phthiotis, a well-known district of Thessaly. The ancients sometimes applied this name also to the whole of Thessaly. With the spread of the Hel-

HELLEBORE.

lenic people southward, the term embraced a gradually increasing territory, until it came to denote the whole of Middle Greece or Greece Proper (modern *Livadia*). At a still later period, the Peloponnesus itself was included under the designation; and finally, H. came to be used in the broadest sense, as comprehending the whole of Greece, with its islands and colonies.—The HELLENES, or Greeks, as distinguished from the more ancient Pelasgians, received this name in the belief that they were descended from a certain Hellen. This mythical personage, son of Deucalion and Pyrrha, or, according to others, of Zeus and Dorippe, and father of Æolus, Dorus, and Xuthus, was said to have been king of Phthia, and to have ruled over all the country between the rivers Peneius and Asopus.

HELLEBORE, n. *hèl' lè-bôr* [L. *hellebörus*; Gr. *hellebörös*—from Gr. *helein*, to kill or overcome; *bora*, food]: a common name of several poisonous plants, ord. *Ranunculacææ*; the Christmas rose or flower: also the White Hellebore, ord. *Melanthaceæ*. HELLEBORINE, n. *-lèb' ör-în*, the active principle of hellebore. HELLEBORUS NIGER, *hèl'-lèb' ör-üs nî'jer* [L. black hellebore]: the Christmas rose; a homeopathic medicine.

HELLEBORE, *hèl' lè-bôr*: name applied to two very different genera of plants. The genus to which it properly belongs and which has belonged since very ancient times, *Hellebörus*, is of nat. ord., *Ranunculaceæ*, characterized by a calyx of 5 persistent sepals, often resembling petals; a corolla of 8 or 10 very short, tubular, honey-secreting petals; numerous stamens and 3—10 pistils; a leathery capsule, and seeds arranged in two rows. The species are perennial herbaceous plants, mostly European, generally with a short root-stock; the stem mostly leafless, or nearly so but sometimes very leafy; the leaves more or less evergreen, lobed, the flowers terminal. A familiar example of this genus is the BLACK H.—so called from the color of its roots—or CHRISTMAS ROSE (*H niger*), a favorite in flower-gardens, because its large white flowers are produced in winter. The leaves all are radical; the stalks generally one-flowered; the flowers white or tinged with red. Black H. formerly had higher reputation as a medicinal agent than it now has. Melampus is represented as employing it in the treatment of madness centuries before the Christian era. The root is the part used in medicine, and is exported from Hamburg, and sometimes from Marseille. It consists of two parts—the rhizome or root-stock, and the fibres arising from it. The former is nearly half an inch thick, several inches long, and knotty, with transverse ridges and slight longitudinal striæ; the latter are numerous, cylindrical, brown externally, and whitish internally. The taste is slight at first, then bitter and acrid. The chemical composition of the root is not accurately known. It is not much used at the present day, but has been found of service (1) in mania, melancholia, and epilepsy; (2) as an emmenagogue; (3) in dropsy—its action as a drastic purgative, and its stimulating effect on the vessels of the liver, rendering it useful;

HELLEBORE.

(4) in chronic skin diseases; (5) as an anthelmintic. Ten or fifteen grains of the powdered root act as a sharp purgative. The tincture, obtained by maceration in spirit, is usually given when its action as an emmenagogue is required. In an excessive dose, it acts as a narcotic acrid poi-



Christmas Rose (*Helleborus niger*).

son, and causes vomiting, purging, burning pain in the stomach and intestines, faintness, paralysis, and death.—

STINKING H. (*H. fœtidus*) grows on hills and mountains in the s. and w. of Europe, and in parts of Britain; it has a very disagreeable smell, and green flowers somewhat tinged with purple: the stem is many-flowered and leafy.—GREEN H. (*A. viridis*), has a leafy stem, with a few large greenish-yellow flowers. The celebrated H. of the ancients was probably a species peculiar to Greece and the Levant, *H. orientalis* or *H. officinalis*; all the species, however, have similar medicinal qualities. From the abundance of the plant around the city of Anticyra, hypochondriacal persons were said to need a visit to Anticyra.—Closely allied to the genus *Helleborus* is *Eranthis*, in which the flowers are surrounded with an involucre, and have a deciduous calyx. A well-known species is the WINTER H., or WINTER ACONITE (*E. hyemalis*), a garden plant, whose yellow flowers, raised only a few inches above the ground, deck the flower-border about the same time with snowdrops. It is a native of middle Europe, but naturalized elsewhere. It thrives in shady places.

WHITE H. (*Veratrum album*) belongs to the nat. ord. *Melanthaceæ*. The genus has polygamous flowers, with 6-leaved perianth, 6 stamens, 3 pistils cohering at the base, a 3-horned capsule separating into 3 many-seeded follicles, and compressed seeds winged at the apex. White H. has a leafy stem, sometimes 4 ft. high, ovate-oblong leaves, a

HELLEN—HELLENIC

long terminal compound panicle, and yellowish-white flowers. It abounds in the mountains of central and s. Europe. The root was formerly much used in medicine, but now rarely, though it seems to act powerfully in some diseases. It is a very acrid and active poison. Its powder is used to destroy lice, and by gardeners for killing caterpillars. A decoction and ointment of it are sometimes used in itch and ring-worm. Caution is necessary even in handling the powder of White H., and very unpleasant effects ensue from its getting into the eyes or nose.—AMERICAN H., or SWAMP H. (*V. viride*), known also as Indian Poke or Itch Weed, is frequent in damp grounds from Canada to the Carolinas. Its root has properties similar to those of White H. These properties seem to depend chiefly on an alkaloid called *Veratria*.

HEL'LEN: mythical ancestor of the Greeks: see HEL-LAS.

HELLENIC, a. *hĕl-lĕ'nĭk* [Gr. *Hellēnikōs*, Grecian—from *Hellen*, mythical son of Deucalion]: pertaining to the Hellenes [*hĕl-lĕ'nĕs*], or Greeks. HEL'LENISM, n. *-lĕ-nĭzm*, a Greek idiom. HEL'LENIST, n. *-nist*, a Jew who spoke Greek; one skilled in Greek. HEL'LENIS'TIC, a. *-tĭk*, also HEL'LEN-IS'TICAL, a. *-ti-kāl*, pertaining to the Greek spoken by the Hellenists. HEL'LENIS'TICALLY, ad. *-lĭ*.—The name *Hellenists* was given to those among the Jews, and afterward in the Christian Church of Judea, who, either by birth or by residence, and by the adoption of the Greek language and usages, were regarded as Greeks in opposition to the Hebrews properly so called, whether of Palestine or of the Dispersion. The name has sometimes been improperly restricted to persons of Greek parentage or descent; but like other Gentile names of the same form, it marks a class distinguished by the peculiar habits and language of Greece rather than by Greek descent. The Hellenists, in this sense, formed a distinct body, and stood in a relation of rivalry, if not of antagonism to the Hebrews (see Acts vi. 1; ix. 29). There is also a clear distinction between Hellenes (Greeks—from *Hellas*, q.v.) and Hellenists. The latter might, it is true, be Hellenes by birth, but the prominent idea conveyed by the name was rather the adoption or affectation of Greek manners and language than Greek parentage or blood.

At the time of our Lord's crucifixion, the Jews of the Dispersion were in almost every part of the Roman empire; but it was among the Jews settled in Alexandria that the Hellenizing tendency found freest development; and to that city we must refer the formation of that peculiar dialect of the Greek language known as the Hellenistic, and of that singularly acute and speculative philosophy which exercised so large an influence on the early Christian schools, and of which Origen is the most famous exponent.

The really characteristic element of the Hellenistic Greek consists in its foreign, especially its Hebrew and Aramaic words and idioms. Although it was in its origin a purely popular form of the language, yet through its use in the Alexandrian or Septuagint version of the Old Testament,

HELLER—HELLEVOETSLUIS.

it acquired all the fixedness and definite character of a written language. The Hellenisms of the Septuagint differ in many respects from those of the New Testament, which again present some points of discrepancy from those of the Alexandrian Fathers; but there are certain leading characteristics common to them all, which constitute the distinctive forms of the dialect, and which may be described as peculiarities of structure and forms of thought derived from those Hebrew or Aramaic idioms which were the native modes of speech of the Greek-speaking Hebrews.

For the influence of the Hellenistic modes of thought on the Alexandrian philosophy, see NEO-PLATONISTS. PLOTINUS: ETC. PHILO (q.v.) was the greatest Jewish Hellenist. The Septuagint (q.v.) was the work of Hellenists: see Winer, *Grammatik des N. Test. Sprachidioms*.

HELLER, *hěl'ér*, ROBERT: magician: 1828–1878, Nov. 18; b. Canterbury, England; son of Henry Palmer, organist of Canterbury Cathedral. His real name was William Henry Palmer, and he was not known as Heller till his removal to this country 1852. He had a wonderful talent for music, and when 12 years of age was a brilliant performer on the piano. He became a fellow of the London Royal Academy, and, while a student, commenced giving magical entertainments. He was a music-teacher in Washington for some years, and then became a professional magician, made several foreign tours, gained renown for feats of unusual difficulty performed with exquisite precision, and accumulated a fortune. He died at Philadelphia.

HELLER, *hěl'ér*, STEPHEN: pianist and composer: b. Pesth, Hungary, 1813, May 15. After thorough preliminary musical study, he completed his course with Halm in Vienna. He gave successful public concerts when 13 years old, made a tour of Hungary and Germany 1829, lived in Augsburg 1829–38, and afterward almost exclusively in Paris. He produced a very large number of compositions chiefly for the piano and remarkable for delicacy. He d. 1888, Jan. 14.

HELLESPONT: see DARDANELLES.

HELLEVOETSLUIS, *hěl'leh-vût-sloys*, or HELVOETSLUYS, *hěl'vût-sloys*: fortified seaport of the Netherlands, province of S. Holland, on the Haring Vliet, an arm of the Maas, on the island of Voorne, 17 m. s.w. of Rotterdam. It has an excellent harbor, an arsenal, docks, and a naval school, and is one of the principal Dutch naval stations. By means of the new canal of Voorden, leading from the Maas to H., and so out to sea, large vessels avoid the shallow bar at the mouth of the Maas. H. is to Rotterdam and the mouth of the Maas what the Helder is to Amsterdam and the Zuider Zee. Here William III embarked for England, 1688, Nov. 11. Pop. (1880) 4,500.

HELL-GATE.

HELL-GATE, or THE GATE (named by the Dutch settlers of New York, *Helle Gat*); narrow passage in the East River, about 7 m. from the Battery, and 1 m. e. of Central Park. At this point a ledge of gneiss projected beneath the channel for some distance from the Long Island shore, rose at certain places nearly to, and at others above the surface of the water, and formed a seething and eddying current extremely dangerous to navigation. The importance of the pass not only to the commercial interests of New York but the general transatlantic steam and sailing service, and the fact that almost the entire obstruction to a safe passage of the East River was found in the numerous reefs of rock at H.-G., induced the federal government to order a thorough survey as early as 1848. This was made by Charles H. Davis and David Porter, lieutenants commanding, U. S. N., who reported the existence and dangerous character of Pot and Frying-Pan rocks, very near mid-channel; Way's Reef, in the usual steam-boat course; the Gridiron; Negro Head, the outer rock of the middle reef; Bread-and-Cheese rock, on the e. end of Blackwell's Island; Flood; Hen-and-Chickens; Great and Little Mill rocks; and the submarine projection at Hallet's Point. Lieut.-com'd'g Davis urged the blasting of Pot-Rock, Frying-Pan, and Way's Reef, and Lieut.-com'd'g Porter favored the removal of at least a part of the reef at Hallet's Point. Nothing was attempted till 1851, when citizens of New York subscribed a fund to enable Maillefert, a French engineer, to apply his process of surface-blasting. This resulted in blowing Bald headed Billy and Hoyt's rocks into deep water, and the deepening of the water over Pot-Rock, Frying-Pan, Way's Reef, Shelldrake, and Diamond Reef; but no impression was made on the Hallet's Point ledge. The following year congress made an appropriation for the removal of the rocks, and placed the work in charge of the engineer's dept. of the army. The Maillefert process was again used, and additional water gained over Pot-Rock. Various reports were made by city, state, and national committees, but no further practical steps were taken till 1866, when Brev.-Maj. Gen. John Newton, U. S. engineers, was ordered to examine the passage and report a plan for its permanent improvement. He reported 1867, Jan., and considerable time was occupied in studying his plans, as they represented many new features of submarine blasting and differed in important essentials from the Maillefert process of surface-blasting by the explosion of cans of gunpowder ignited by a magnetic current—then the chief method known. Gen. Newton proposed constructing a submarine drilling scow to be moored over the scene of operations and provided with a dome holding 21 drill-tubes through which the drills were to work when the dome had been lowered over the point of attack; drilling holes 6 to 8 ft. apart and not less than 4 ft. deep; charging them with nitro glycerine; and after the explosion removing the broken rock by a steam-grapple. This plan was proposed for the minor rocks—that at Hallet's Point calling for

HELL-GATE.

operations of radically different character. The first use of this drilling scow and dome was upon Diamond-Reef near the mouth of the East River 1871, May. Holes were drilled 7 to 13 ft. deep, and charged with nitro-glycerine at the rate of from 30 to 55 pounds per hole. The same season the machine was used alternately on Coenties Reef, where 93 drill and 17 surface-blasts were made. In 1872, July, similar operations were begun on Frying-Pan rock, where 17 drill and 11 surface-blasts were made. The machine was then put over Pot-Rock, and between Aug. 5 and Dec. 28—when ice caused a cessation of work—40 holes were drilled and blasted, and 60 seam and 24 surface blasts made. In 1874, Aug., work on Way's Reef was begun, and by 1875, Jan. 20, it was wholly removed to a depth of 26 ft. at mean low water. This work comprised 262 holes drilled, over 16,000 pounds of nitro-glycerine and $38\frac{1}{2}$ pounds of dynamite used, and 65 drill and 16 surface-blasts made. Since 1874, Coenties Reef, Shelldrake, Diamond Reef, a reef near the North Brothers, and the Heel-tap Rocks, n. of Great Mill Rock, have been blasted and entirely removed.

The great work on Hallet's Point Reef began 1869, Oct., and the excavations were finished—after various delays—1875, June, an actual working period of 4 years and 4 months. The reef extended 720 ft. along shore and about 300 ft. into the channel, and the area operated on contained about 3 acres. Work was prosecuted from a huge coffer-dam, from which 41 radial tunnels, long and short, were cut in the rock, with 11 transverse galleries, which left 172 piers of natural rock to support the roof. The tunnelling was done first by hand-drilling and black powder, and afterward by machine-drills and quick explosives, and occupied the period 1870, July 5—1875, June. On the completion of the excavation or tunnelling, 5,375 three-in. holes were drilled in the roof, and 1,080 three-in. and 286 two-in. holes in the piers; a total of 56,548 ft. of three-in. and 1,897 ft. of two-in. holes. The cubic contents of the roof and piers were 63,135 yards. Of the total number of holes 4,427 were charged with tin cases (the majority 22 in. and the remainder 11 in. long), containing in bulk $9,127\frac{8}{16}$ pounds of rend-rock, $11,852\frac{1}{16}$ pounds Vulcan powder, and $28,935\frac{4}{16}$ pounds dynamite No. 1. All the charged holes or mines were connected by wire, and divided into 23 divisions of 160 mines each, and the divisions sub-divided into groups of 20 mines each. The batteries numbered 23, one for each division, and each distinct from the other. When all was ready Gen. Newton's baby-daughter pressed an electrical button, 1876, Sep. 24; a body of water, spray, and vapor immediately shot upward to a height of 123 ft.; a slight underground shock was felt in New York and Brooklyn; and the great explosion, whose effects had been dreaded by many timid persons, was over, and as far as known not a pane of glass was broken, even in buildings close to the shaft. When the broken rock was removed, it was found that there was a depth of 26 ft. at mean low water over the reef. Every cartridge had been exploded.

HELLIER—HELM.

The largest and most dangerous obstruction in the whole locality was Flood Rock, sometimes called the Middle Reef, 1,200 ft. long and 600 ft. in its widest part. Gen. Newton began work on this rock 1875, June 7, and by 1876, May, had sunk two shafts, 23 and 51 ft. deep respectively, and excavated 229 ft. of tunnel. There were more frequent delays on this rock than at Hallet's Point; no work at all was done for more than a year, and fully two years' time was lost. In 1884, July, a govt. appropriation of \$360,000 became available, and in the following month work was resumed. The same general course was pursued as at Hallet's Point. The area of reef operations was about 9 acres; of tunnelling 21,670 ft.; depth of gallery floors below mean low tide 50-64 ft.; supporting piers 467, each 15 ft. sq.; drill-holes in roof 11,789 and piers 772; total length of holes 113,102 ft.; explosives used, 240,399 pounds of rack-a-rock, and 42,331 pounds of dynamite. The mines were fired by electricity 1885, Oct. 10, when the water rose to a height of 150 ft. and pieces of rock 40-50 ft. The entire roof of the reef was shattered, and the removal of the *débris* opened a channel about 1,200 ft. wide, nearly double the former one.

HELLIER, or HELER: see under HELE.

HELLIN, *ěl-yěn'*: town of Spain, province of Albacete, 40 m. s.s.e. of the town of Albacete; in a hilly district near the e. bank of the Mundo, a tributary of the Segura. Its houses are mostly neat, and, unlike most Spanish towns, it has an air of comfort and cleanliness. In the vicinity are productive royal sulphur mines. Pop. 10,200.

HELLISH: see under HELL.

HELM: see under HELMET.

HELM, n. *hělm* [Ger. *helm*, a handle, a rudder: AS. *helma*, a helm: Icel. *hialma*, a rudder: comp. Gael. *ailm*, a helm or handle of the rudder]: the movable instrument at the hinder part of a ship by which it is steered: the place of direction or management. In nautical affairs the helm denotes the entire steering apparatus of a ship. This apparatus consists of three distinct portions—the rudder, the tiller, and the wheel; though in boats and small vessels the wheel is ordinarily dispensed with. The rudder is the instrument acting directly upon the water: for its action and form, see RUDDER. The tiller is a lever, formed into a handle, by means of which the steersman can greatly multiply on the rudder (whose position is almost identical with the fulcrum, the hinges) the power that he exerts against the long end of the tiller. The wheel is an ordinary wheel and axle, moving the long end of the tiller from side to side by the agency of ropes, again multiplying the power, and otherwise convenient as occupying a smaller space on the upper deck than the long tiller. To 'starboard the helm' is to put the tiller so as to carry the rudder to port; 'port the helm,' the converse. To 'put up the helm,' is to let the ship go more fully from the wind; while to 'put down the helm,' is to exercise a contrary effect. HELM, v. to steer; in *OE.*, to guide or conduct. HELM'ING, imp. HELMED,



Heligoland.



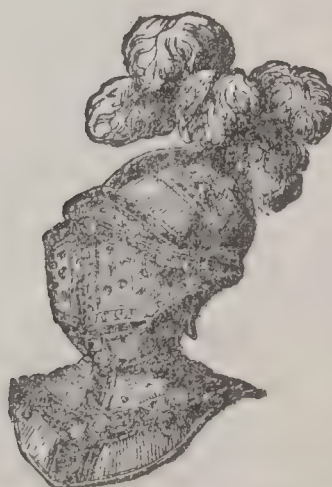
Greek Helmet.



Helmet-shell (*Cassis tuberosa*).



Heliotrope: Jenny Lind variety.



Helmet of Charles the Bold.

HELMET—HELMHOLTZ.

pp. *hēlmd*: ADJ. furnished with a helm. HELM'LESS, a. without a helm. HELMS'MAN, n. one who guides the helm.

HELMET, n. *hēl'mēt*, also HELM [Goth. *hilms*; Icel. *hialmr*; Ger. *helm*, a helmet—from Icel. *hilma*, to cover, to hide—*lit.*, the thing which conceals and protects]: defensive armor of metal or leather for the head. The earlier Greek and Roman helmets, shown by many extant sculptures, were surmounted by plumes, but unlike their modern successors, did not protect the face. During the middle ages, helmets were of the finest steel, often inlaid with gold, and provided with bars and flaps, to cover the face in action, and to allow of being opened at other times. As firearms became more common, helmets naturally lost their utility, especially as regarded the face. Those remaining are in military matters limited mostly to heavy cavalry, afford no protection to the face, and are for ornament rather than use. Firemen wear a heavy head-piece of leather and brass, to protect them from falling fragments. In India and other hot climates, helmets of white felt, with the additional screen of rolls of linen, are worn by men, as protection from the sun. In *her.*, the helmet denotes, by modifications in form, certain gradations of rank; and helmets were set over coats of arms to bear the crest, and indicate by their form the rank of the bearer. The part of the helmet which opens to show the face is called the *visor* or *beaver* (to allow of drinking—*beverage*). Four forms of helmet are now in use in English heraldry; for the king and princes of the blood-royal; for the nobility; for knights and baronets; for esquires. A much greater variety is in use in continental heraldry. A helmet is never placed over the arms of any woman except the sovereign.—In *bot.*, an arched concave petal or sepal, or a part of one, as the upper lip of several labiate flowers. HEL'METED, a. furnished with a helmet.

HELMET-SHELL (*Cassis*): genus of gasteropodous mollusks of the family *Buccinidae*; the animal much resembling the common Whelk (q.v.) with which it also nearly agrees in habits; the shell swollen, rather thick and solid, with bold ridges, a short spire and a long aperture, the outer lip toothed, the canal recurved. The species, which are numerous, all are natives of tropical seas. Most of them are beautiful; and they are used by engravers for making cameos, the differently colored layers producing exquisite effects when skilfully cut.

HELMHOLTZ, *hēl'holts*, HERMANN LUDWIG FERDINAND VON: 1821, Aug. 31—1894, Sep. 8: scientist: b. Potsdam, Prussia. He studied medicine at the military institute, Berlin, and served on the staff of one of the hospitals; afterward returning to Potsdam as an army surgeon. In 1848 he was given the chair of anatomy in the Berlin Academy; 1849 was called as professor of physiology to Königsberg; to a similar place at Bonn 1855; to Heidelberg in 1858; and in 1871 to the chair of physics at the Berlin University. In 1887 he was appointed by the government director of the newly founded institution for physical research, where he remained till his death, though he con-

HELMINTHIC—HELMOND.

tinued to lecture occasionally at the University of Berlin. His exalted reputation was grounded on his work on *The Conservation of Energy* (1847). *Handbook of Physiological Optics* (1856-66) and *The Doctrine of Tone Sensations* (1862) are his most noted works. Professor Helmholtz is to be credited with notable discoveries in almost every department of physics. The most directly practical of these, and the one for which he is most generally known, was the ophthalmoscope, an instrument by which the whole interior of the eye can readily be examined, and which is now in universal use. He also invented a method of analyzing sound by the use of hollow bodies called resonators. He discovered the acoustic origin of the vowel sounds in human speech, and invented a series of tuning forks which enabled him to produce them artificially. He first established a relationship between sound and light by demonstrating the existence of 'sound colors' arranged in accordance with the laws of the solar spectrum. He succeeded in popularizing the branches of the sciences in which he labored, so that humanity in general might reap the fruit of his labors, alike in knowledge and in applied results. His published works are quite too numerous to be even named; and more than 120 of his scientific disquisitions have been read before the Royal Society alone. In 1873 he received the Copley medal from the Royal Society of London, Eng., and in 1883 was raised to 'the status of nobility' by decree of the Emperor William I. of Germany. In 1893 he visited the United States as a guest at the World's Fair, and was given receptions in Chicago and New York city. Helmholtz has more profoundly than any other man, save perhaps Darwin, modified the views of his generation with reference to some unsolved problems of the universe. The history of his life is that of such scientific work as has never been surpassed, if equalled, by any individual. It has been said that the three ideas which will make the present century memorable in coming ages are the doctrine of the conservation of energy, the doctrine of evolution, and the germ theory of disease. The first is indissolubly associated with the name of Helmholtz.

HELMINTHIC, a. *hĕl-mĭn'thĭk* [Gr. *helmins*, a worm]: relating to worms; expelling worms: N. a medicine for expelling worms. HELMINTHOID, a. *hĕl-mĭn'thoyd* [Gr. *eidos*, resemblance]: worm-shaped; vermiform. HEL'MINTHOL'OGY, n. *-thŏl'ŏ-jĭ* [Gr. *logos*, a discourse]: the science or history of worms: formerly of general application, but now restricted to the red-blooded worms, such as the medicinal leech and earth-worm. HEL'MINTHOL'OGIST, n. *-jĭst*, one who. HEL'MINTHOLOG'IC, a. *-thŏ-lĭj'ĭk*, or HEL'MINTHOLOG'ICAL, a. *-ĭ-kāl*, pertaining to worms or their history. HEL'MINTHITES, n. plu. *-thĭts*, in *geol.*, applied to those long sinuous tracks so common on the surfaces of many flaggy stones—usually considered as worm-trails.

HELMOND, *hĕl'mont*: town in the Netherlands, province of n. Brabant, 21 m. s.e. from Bois-le-Duc, on the

HELMONT—HELMSTADIAN CONTROVERSY.

Æa and South Willemsvaart. It has a good haven. The principal industries are the manufacture of cotton, woolen, and linen fabrics, cotton-printing, dyeing, calendering, beer-brewing, etc. Pop. (1880) 7,366.

HELMONT, *hěl'mont*, JAN BAPTISTA VAN, Lord of Merode, Royenborch, Oorschot, and Pellines: Belgian chemist: 1577-1644; b. Brussels. After a course at the Univ. of Louvain, he accepted the chair of surgery there for two years. He became a devout mystic, and entered on a life of humility. The study of the works of Paracelsus seems to have turned his special attention to chemistry and natural philosophy, and in these studies he spent several years in the universities of Italy and France. He returned home, married and settled at his estate near Vilvorde, where he spent the remainder of his life in philosophic investigations, and where he died. Some writers regard him as the greatest chemist who preceded Lavoisier; but his language is often so obscure, that it is not always easy to ascertain his meaning. He was the first to point out the imperative necessity for employing the balance in chemistry. He is supposed by some authorities to have been the first to apply the term *gases* to elastic aëriiform fluids. Of these gases he distinguished several kinds. He was also the first to take the melting-point of ice and the boiling-point of water as standards for measurement of temperature. By means of the balance he showed, in many instances, the indestructibility of matter among chemical changes; e.g., he demonstrated that a salt dissolved in water, or silver dissolved in aquafortis, could be recovered unchanged in quantity. In his works first the term *saturation* is employed, to signify the combination of an acid with a base: and he was one of the earliest investigators of the chemistry of the fluids of the human body.

With other physiologists of his day, he speculated much on the seat of the soul, which he placed in the stomach, chiefly for these reasons. 1. It cannot exist in the brain, because that organ contains (according to H.) no blood; 2. It does exist in the stomach, because when we hear bad news, we lose our appetite. H.'s chemical writings are a curious combination of mystical speculation and acute research. See the *Histories of Chemistry* by Kopp and Höfer.

The most important of his works is his *Ortus Medicinæ, id est initia Physicæ inaudita, progressus Medicinæ novus in morborum ultionem ad vitam longam*, published by his son four years after his death. It passed through a very large number of editions, and was translated into Dutch, French, German, and English. A very curious volume, containing translations of some of his works, was published by W. Charlton, 1650, *The Ternary of Paradoxes; the Magnetic Cure of Wounds; the Nativity of Tartar in Wine; and the Image of God in Man*.

HELMSTADIAN CONTROVERSY, n. *hělm-stád'i-an*-[from *Helmstadt* in central Germany]: in *chh. hist.*, the controversy which originated at Helmstadt, called also the Syncretistic or Calixtine Controversy: see CALIXTUS.

HELMSTEDT—HELOT.

HELMSTEDT, *hělm'stět*, or **HELMSTÄDT**: town in *u.* Germany, duchy of Brunswick, 22 m. e.s.e. of the city of Brunswick. A university, founded here by Julius, Duke of Brunswick 1575, was suppressed by Jerome Bonaparte 1809; the university buildings now serve as court-houses. There are manufactures of flannel, soap, hats, and grain-spirits. Here the first Saxons were baptized by St. Ludgarus. H. was formerly a member of the Hanseatic League. Pop. (1880) 8,684; (1890) 10,955.

HELMUND, *hě'l münd*: river of Afghanistan, rising 35 m. w. of Cabul, at an elevation of 11,500 ft. After a s.w. course of about 650 m. it loses itself in the salt lake of Seistan or Hamoon by several mouths, about 31° 30' n., and long. 62° e. The immediate banks, generally bordered by deserts on either side, abound with traces of former cultivation and wealth. Like tropical rivers in general, the H. varies largely in volume according to the season, being, in many places, thrice as deep and broad in the rainy season as it is at other times.

HELMUTH, *hě'l mŭth*, **WILLIAM TOD**, M.D.: homeopathic physician; b. Philadelphia, 1833. He graduated at St. Timothy's College, Baltimore, and the Homeopathic Medical College of Penn.; became pres. of the American Institute of Homeopathy and the New York Homeopathic Medical College, vice-pres. of the Medico-Chirurgical Soc., and dean of the St. Louis College of Homeopathy; and has held the offices of prof. of surgery in the New York Homeopathic College, surgeon to the Ward's Island hospital and the New York Hahnemann hospital, and consulting surgeon to other institutions in his school. His publications include *A System of Surgery*, *The Cleft Palate*, *Nerve Stretching*, and *Extrophy of the Bladder*. D. 1902.

HELODERMA, n. *hě-lō-dér'ma* [Gr. *hēlos*, a nail; *derma*, skin]: typical genus of the *Helodermidae*, family of lizards, having furrowed fangs. Only one species is known, *H. horridum*, venomous; s.w. United States and Mexico.

HELODES, n. *hě-lō'děz* [Gr. *helos*, a swamp]: in *pathol.*, marsh fever; also a kind of fever characterized by profuse perspiration.

HELOISE: see **ABELARD**.

HELOSIS, n. *hě-lō'sīs* [Gr. *hēlos*, a nail; *ōsis*]: in *bot.*, typical genus of *Helosideæ*, a tribe of *Balanophoraceæ*. The species are parasites, inhabiting the warmer parts of America.

HELOSIS, n. *hě-lō'sīs* [Gr. *heilō*, I turn]: in *pathol.*, eversion of the eyelids, and convulsions of the muscles of the eyes.

HELOT, n. *hě'l'ōt* or *hě'l'ōt* [from anc. *Helos*, in Laconia, whose inhabitants were enslaved; L. *helōtēs*, the helots: perhaps Gr. *helein*, to take, to conquer]: a slave of anc. Sparta. **HEL'OTISM**, n. *-izm*, the condition of the helots or slaves of anc. Sparta. **HEL'OTRY**, n. *-ōt-rĭ*, the body of helots; helot-like bondsmen.—The population of ancient Sparta was divided into four classes, the lowest of which

HELP—HELPS.

was formed of serfs or slaves, called Helots. These Helots are generally supposed to have formed the original population of the country, and to have been reduced to bondage by their Dorian conquerors, the numbers, however, being swelled from time to time by conquest of enemies. They belonged to the state, which had the power to set them at liberty; but they toiled for individual proprietors, and were *bound to the soil*, i.e., they could not be sold away from the place of their labor. They were the tillers of the land (for which they paid a rent to their masters), they served at the public meals, and were occupied on the public works. In war, they served as light troops, each free-born Spartan who bore heavy armor being accompanied to battle by a number of them, sometimes as many as seven. On rare occasions they were used as heavy armed soldiers. It is doubtful whether after emancipation they could ever enjoy all the privileges of Spartan citizens. They were treated with much severity by their masters, and were subjected to degradation and indignities. They were whipped every year, to keep them in mind of their servile state; they were obliged to wear a distinctive dress (clothes of sheepskin, and a cap of dog's skin), and to intoxicate themselves, as a warning to the Spartan youth; and when multiplied to an alarming extent, they were often massacred with barbarous cruelty. On one occasion, 2,000 of them, who had behaved bravely in war, were encouraged to come forward for emancipation, and were then treacherously put to death. The Spartans organized, as often as necessity required, *secret service companies* [Gr. *crypteia*], of young men, who went abroad over the country armed with daggers, and by night and day assassinated the unfortunate Helots, selecting as their special victims the strongest and most vigorous of the oppressed race.

HELP, v. *hělp* [Goth. *hilpan*; Icel. *hialpa*; Ger. *helfen*, to help, to take care of: O.H.G. *halpa*, side, half]: *literally*, to side with one or take his part; to assist; to aid; to forward or promote; to avoid; to forbear; to lend aid; to prevent or hinder: N. assistance; aid; relief; that which gives aid or relief; in *Amer.*, a hired man or woman. HELP'ING, imp.: ADJ. assisting; aiding. HELPED, pp. *hělp't*. HELP'ER, n. an assistant. HELP'FUL, a. *-fűl*, that gives aid or assistance; useful. HELP'FULNESS, n. HELP'LESS, a. unable to succor one's self, and wanting assistance. HELP'LESSLY, ad. *-lű*. HELP'LESSNESS, n. want of ability; want of succor. HELPMATE, n. *hělp'măt*, a companion or partner. To HELP FORWARD, to advance by assistance. To HELP OUT, to aid, as in delivering from a difficulty. To HELP OVER, to enable to surmount. To HELP TO, to furnish with.—SYN. of 'help. v.' to succor; relieve; serve; cure; heal; remedy; promote; forward.

HELPS, *helps*. Sir ARTHUR, K.C.B. 1813, July 10—1875, Mar. 7; b. Balham Hill, parish of Streatham, Surrey: English essayist and historian. He entered at Trinity College, Cambridge, where he took the degree B.A. 1835.

HELSINGBORG—HELSINGFORS.

leaving the university, he obtained a post in the civil service, and on his resignation, he retired to Bishop's Waltham, in Hampshire, where, with ample possessions, he enjoyed lettered ease. His first notable work, *Essays Written in the Intervals of Business*, appeared 1841. It was followed by two dramas, *Catherine Douglas*, and *King Henry the Second* (1843), by an essay on the *Claims of Labor* (1844), and by *Friends in Council* (1847-49). *Friends in Council* has been, and still is, greatly admired by thoughtful readers, and has gone through many editions. It is a series of readings and conversations on important social and moral questions; with peculiar beauty of style luminous suggestion, brightness of humor, and sweetness of spirit. His *Conquerors of the New World and their Bondsmen* appeared 1848; *Companions of my Solitude*, 1851. Among his subsequent works are—*Oulita*, a play; *The Spanish Conquest in America* (1855-57, a work of careful research, but not as a whole successful); *Friends in Council*, 2d series (1859); *Essay on Organization*; *Life of Pizarro* (1869); *Casimir Maremma*, and *Brevia* (1870); *Life of Hernando Cortes*; *Thoughts upon Government* (1871); *Life and Labors of Thomas Brassey* (1872); and *Social Pressure* (1874). He was clerk to the privy council, and became a K.C.B. 1872.

H. is the most delightful essayist since Lamb and Hunt. He everywhere shows acuteness, humor, a satire which gives no pain, and a quiet depth of moral feeling manifesting itself mainly in an earnest recognition of man's social responsibilities; while his style, in purity and clearness, can hardly be matched among his contemporaries.

HELSINGBORG, *hěł'sing-bawrg*: ancient fortified seaport town of s. Sweden, 33 m. n.n.w. of the town Malmö; on the Sound, opposite Elsinore. Steamers leave H. almost daily for Copenhagen, Malmö, Elsinore, and other places. There is a good harbor. Earthenware and iron goods are manufactured. Pop. (1880) 11,550; (1901) 25,164.

HELSINGFORS, *hěł'sing-fawrs*: fortified seaport of Russia, cap. of the govt. of Finland, and after Crons. It, the most important naval station on the Baltic; beautifully situated on a peninsula, surrounded by islands and rocky cliffs, in the Gulf of Finland, 191 m. w from St. Petersburg by sea (274 m. by rail). A series of formidable batteries, called the fortifications of Sveaborg, and consisting of seven strongly fortified islands and numerous islets. protect the entrance to the harbor, and are of such strength and so well appointed, as to warrant the application to them of the name of the Northern Gibraltar. The whole front presented by the successive works is about a mile in length, and, beside the casemates for small-arms, the united fortresses mount about 1,000 guns, and are garrisoned by 12,000 men. The harbor itself is further defended by two forts. H. is the largest and handsomest town of Finland; the broad streets, consisting of houses painted externally yellow and green, intersect at right angles, and there are several fine public squares. Of the public buildings, the

HELSINGÖR—HELVELLA.

most striking are the residence of the governor, the senate-house, the university buildings, and a magnificent church. The university, removed hither from Abo 1829, where it had been founded 1640, comprises four faculties, has 40 profs. and from 2,000 to 2,500 students. In connection with it are a library of 150,000 vols., a hospital, a botanic garden, and a valuable observatory. Since 1840, H. has been a favorite bathing-place, and attracts many visitors during summer from St. Petersburg. The town has considerable trade in Baltic produce; it exports chiefly corn, fish, deals, and iron; and manufactures sailcloth and linen. It has the largest import trade in Finland. Pop. (1880) 43,142, with the garrison; (1888) 58,402; (1896) 77,484.

H. was founded by Gustavus I. of Sweden in the 16th c., but the site of the town was removed nearer the shore 1639. In 1819, it became the cap. of Finland. In 1855, Aug., during the Crimean war, Sveaborg was bombarded for two days and nights by a section of the allied fleet, without any material impression being made upon the forts. The town has still many Swedish characteristics.

HELSINGÖR': see ELSINORE.

HELST, *hēlst*, BARTHOLOMEW VAN DER: Dutch painter: b. Haarlem in the beginning of the 17th c.; d. Amsterdam, 1670. He attained great celebrity as a portrait-painter. One of his works (in the Chamber of Justice at Amsterdam), representing 30 full-length figures of a train-band with the Spanish ambassador in the midst, was pronounced by Sir Joshua Reynolds 'the first picture of portraits in the world.' His *Militia Dinner* also is a splendid piece of art.

HELSTON, *hēl'ston*: old market-town and municipal borough in the county of Cornwall, England; pleasantly situated on an elevation, at the head of a pretty valley opening to the sea, about 10 m. w.s.w. of Falmouth. It was made a borough by King John 1201. May-games, or *Floralia*, are still kept up here. Pop. (1881) 3,432; (1891) 3,198.

HELTER-SKELTER, ad. *hēl'tēr-skēl'tēr* [Low Ger. *hulter-polter*, an exclamation imitating a loud rattling noise; *hulter-de-bulter*, in a great hurry]: in hurry and confusion; tumultuously.

HELVE, n. *hēlv* [AS. *helf*; Bav. *helb*; O.Dut. *helve*, the handle of an ax; Ger. *helm*, handle of a tool]: the handle of an ax or hatchet: V. to furnish with a helve. HELV'ING, imp. HELVED, pp. *hēlvd*.

HELVEL'LA: genus of fungi, of the order *Ascomycetes* (see FUNGI), closely allied to morels, but differing in having the *pileus* turned downward, lobed and folded, and the surface of the *hymenium* even. Some of the *Helvellæ* are edible, and much used in Germany.



Helvella Esculenta.

HELVELLYN—HELVETIUS.

HELVELLYN, *hĕl-vĕl'lin*: one of the highest mountains of England, in the lake district, Cumberland, between Keswick and Ambleside. It is 3,055 ft. high, is easy of ascent, and commands magnificent views.

HELVE'TIAN REPUB'LIC: see SWITZERLAND.

HELVETIC, a. *hĕl-vĕt'ik* [L. *Helvetii*, anc. inhabitants of Switzerland]: pertaining to Switzerland. **HELVETIC CONFESSIONS**: see CREEDS AND CONFESSIONS.

HELVETII, *hĕl-vĕ'she-ī*: Celtic people inhabiting, according to Cæsar, the region between the mountains of Jura on the w., the Rhone on the s., and the Rhine on the e. and n.—corresponding to modern Switzerland. They had 12 towns and 400 villages. The great and fatal event in their history is their attempted irruption into and conquest of Southern Gaul, in which they were repulsed by Cæsar with frightful slaughter. The story of this expedition is circumstantially narrated by the Roman commander. They collected three months' provisions, burned their 12 cities, 400 villages, and all isolated dwellings, and made a general rendezvous by Lake Lemán in the spring B.C. 58. Cæsar hastened to Geneva, destroyed the bridge, raised two legions in Cisalpine Gaul, and when the Helvetians sent delegates to demand a passage, delayed them until he had built a wall along the Rhone, 16 ft. high and about 19 Roman miles in length, flanked with redoubts. Having vainly attempted to cross this barrier, the H. took another route, but were followed and defeated with a terrible slaughter at Bibracte (modern Autun, in Burgundy), and the remnant compelled to return to their own country, where they became subject to the Romans. Of 368,000 who left their homes, including 92,000 fighting-men, only 110,000 returned. In the commotions which followed the death of Nero, the Helvetians met with another terrible catastrophe. Remaining faithful to Galba, they were fallen upon by Cæcina, a general of Vitellius, who gave them to the rapacity of his legions. They were massacred by thousands, multitudes were sold to slavery, and their towns pillaged and burned, their capital destroyed, and their governor executed. From this time they scarcely appear as a distinct people.

HELVETIUS, *hĕl-vĕ'shĭ-ŭs*, **CLAUDE-ADRIEN**: 1715–1771, Dec. 26; b. Paris; from a family of Swiss origin, as the name H. implies. He received a careful education. Intended for a financial career, he was sent to his uncle, D'Armancourt, *Directeur des Fermes*, at Caen, to obtain a practical knowledge of the subject, and at the age of 23 was appointed to the lucrative office of *Fermier-Général*; but the oppressive nature of the duties which it involved was not at all to the liking of H., who was of very humane and easy disposition, and he quickly resigned it for the situation of chamberlain to the queen's household. He now led, like every other courtier of his time, a life of mere gallantry, which appears odious as judged by modern standards; but happily he soon tired of it, and after marrying in 1751 the beautiful and accomplished daughter of Comte de

HELVOETSLUYS—HEMANŠ.

Ligneville, he withdrew to a small estate at Voré, where he spent the most of his life in the education of his family, the improvement of his peasantry, and literary labors. In 1758 appeared his celebrated work, *De l'Esprit*, in which he endeavors to prove feeling (*sensibilité*) to be the source of all intellectual activity, and that the grand lever of all human conduct is self-satisfaction. But he admits, at the same time, that self-satisfaction assumes different forms; e.g., the self-satisfaction of a good man consists in the subordination of private to more general interests—first, to the circle among which he lives; then to the community; and, finally, to the world at large. The philosophy of the book is, of course, materialistic; it denies man's liberty of choice between good and evil, and denies the existence of an absolute right. It was denounced by the doctors of the Sorbonne, and condemned by the parliament of Paris to be publicly burned. It is not evident that the book had force sufficient to call forth such antagonism. H. was much disgusted, and 1764 left France to visit England, and Germany, where Frederick II. received him with distinction. He died at Paris, leaving a work, *De l'Homme, de ses Facultés, et de son Education*, published by Prince Galyzin (2 vols. London 1772). Among the editions of his collected works, were two published at Paris 1795, one in 5 and the other in 13 vols. His wife, who survived him many years, resided at Auteuil, near Paris, where she was visited by the most distinguished personages, and is often mentioned in the memoirs of that brilliant period.

HEL'VOETSLUYS: see HELLEVOETSLUIS.

HEM, n. *hēm* [W. *hem*, a hem, a border: Gael. *aom*, to bend over: Fris. *heam*, a hem]: the edge or border of a garment doubled down and sewed: V. to fold down and sew the edge of cloth. HEM'MING, imp. HEMMED, pp. *hēmd*.—SYN. of 'hem, v.': to border; edge; inclose; environ; confine; shut: see HEM 2.

HEM, v. *hēm* [an imitative word: Ger. *hemmen*, to stop the motion of a body: Sw. *hamma*, to restrain, to check: Ger. *hamm*, or *humm*, an int. of prohibition, stop! let it alone!]: to confine; to inclose; to surround. HEM'MING, imp. HEMMED, pp. *hēmd*, inclosed; surrounded. *Note*.—The general sense of 'to confine, to surround,' seems to run through both entries of HEM.

HEM, n. or int. *hēm* [imitative]: a sort of half-voluntary cough as a preparation for speaking, or as a call to a person at a little distance.

HEMA- [Gr. *haima*, blood]: used in the beginning of many compound words — (Hemac-, Hemad-, Hemal-, Hemas-, Hemat-) for which, see the same words beginning with HÆMA-.

HEMANŠ, *hēm'anz*, FELICIA DOROTHEA: 1793, Sep 25—1835, May 13; b. Liverpool: English poetess. Her father George Browne, was of Irish extraction, and her mother of mixed German and Italian descent. At an early age she showed a taste for poetry, in which she was encouraged by

HEMATIN—HEMI.

her mother. Her first volume was published 1808 when she was only 15 years of age, and contained a few pieces written about four years earlier; her second, *The Domestic Affections*, appeared 1812. In the same year she married Captain Hemans of the 4th Regt., whose health had suffered in the retreat on Corunna, and afterward in the Walcheren expedition, and who found it necessary a few years after to remove to Italy. After that period they never met. Although five sons were born of this marriage, it was not understood to have been happy. Mrs. H., spent the rest of her life in N. Wales, Lancashire, and latterly at Dublin, where she died. Her principal works are—*The Vespers of Palermo*, a tragedy (1823); *The Siege of Valencia*, *The Last Constantine*, and other Poems (1823); *The Forest Sanctuary* (1827); *The Songs of the Affections* (1830); and *Hymns for Childhood*, *National Lyrics and Songs for Music*, and *Scenes and Hymns of Life*. A vol. of *Poetical Remains* was published after death; subsequently a complete edition of her works, with a memoir by her sister, was issued by Messrs Blackwood.

Mrs. H., without great daring or force, is sweet, natural, and pleasing, with fine imagination and an attractive enthusiasm and romance. She had skill in versification, and a delicate perception of rhythm. But she was too fluent, especially too emotionally fluent, and wrote much and hastily; her lyrics are her best productions; her more ambitious poems, especially her tragedies, being insipid. Still, she was a woman of true genius, and one or two of her little pieces, *The Graves of a Household*, *Treasures of the Deep*, *The Homes of England*, and some others, are perfect in pathos and sentiment, and will live as long as the English language.

HEMATIN, n. *hēm'ă-tîn* [Gr. *haima*, blood]: the coloring matter of blood: see HÆMATIN. HEMATITE, n. *-tīt*: see HÆMATITE. HEM'ATIT'IC, a. *îk*, pertaining to or resembling hematite.

HEMERALOPIA, n. *hēm'ēr-ă-lō'pî-ă* [Gr. *hēmēra*, day; the latter part of doubtful formation, usually referred to Gr. *ōps*, the eye, or *optōmai*, I see; the *l* may be introduced for the sake of euphony]: day vision only; night-blindness; intermittent amaurosis, in which the person is able to see only in daylight. HEMERALOPS, n. *hēm'ēr-ă-lōps*, one afflicted with night-blindness.

HEMEROBAPTISTS, *hē-mēr-o-băp'tîsts*: ancient Jewish sect allied doctrinally with the Pharisees, but agreeing with the Sadducees in the denial of a belief in the resurrection of the dead. They were so called because of their custom of making daily ablutions as a sign of the spiritual cleansing from sin, and are mentioned by Epiphadius—who called their belief the fourth heresy among the Jews—by Hegesippus, and Justin Martyr. By some the name has been given also to the Mendæans, or Christians of St. John.

HEMEROCAL'LIS: see DAY-LILY.

HEMI, *hēm'î* [Gr. *hēmî*, half—from *hēmîsū*, the half]:

HEMICARP—HEMIMORPHITE.

a prefix signifying a half. DEM'I [F.]: a half. SEM'I [L.]: a half.

HEMICARP, n. *hēm'ī-kārp* [Gr. *hēmī*, half; *karpos*, fruit]: in *bot.*, one portion of a fruit which spontaneously divides into halves.

HEMICHOREA, n. *hēm-ī-kōr'ē-a* [prefix *hemi-*; Gr. *choreia*, dancing]: in *pathol.*, form of chorea, or St. Vitus's dance, in which the movements are entirely confined to one side.

HEMICRANIA, *hēm-ī-krā'nā-a*, or HEMICRANY [Gr. *hēmī*, half; *kranion*, the skull; Fr. *migraine*; Eng. *migrains*]: a variety of headache (q.v.), affecting only one side at a time, also frequently intermittent; whence it has been termed, not accurately, brow-ague.

HEMICYCLE, n. *hēm'ī-sī-kl* [Gr. *hēmī*, half; Eng. *cycle*]: a half cycle or circle; in *bot.*, applied to the transition from one floral whorl to another when it coincides with a definite number of turns of the spiral.

HEMIDESMUS, *hēm-ī-dēs'mūs*: genus of plants of nat. ord. *Asclepiadaceæ*. The root of *H. Indicus* is used in medicine, chiefly in India, and is known as Indian sarsaparilla. It is in some cases a good substitute for sarsaparilla, and appears to derive its properties from a crystallizable and volatile principle called *Hemidesmin* or *Hemidesmic* Acid. The plant is a climbing shrub, with leathery leaves and axillary umbels of flowers. It is common in almost all parts of India.

HEMIDIAPENTE, n. *hēm-ī-dī-a-pēn'tē*: in *mus.*, an imperfect fifth.

HEMIDISTROPHIA, n. *hēm-ī-dīs-trō'fī-a* [prefix *hemi-*; Gr. *dus*, hard; *trophē*, nourishment]: in *bot.*, only partial nourishment, as in the case of trees nailed to a wall or whose roots are prevented from spreading sufficiently by too close proximity to other roots.

HEMIDITONE, n. *hēm-ī-dīt'ōn*: in *mus.*, the less or minor third.

HEMIGAMOUS, a. *hēm-īg'ā-mūs* [Gr. *hēmī*, half; *gamos*, marriage]: having two florets in the same spikelet, one of which is neuter and the other unisexual.

HEMIGLYPH, n. *hēm'ī-glīf* [Gr. *hēmī*, half; *gluphē*, a carving]: in *arch.*, a half-channel at the edge of the triglyph tablet in the Doric entablature.

HEMIHEDRAL, a. *hēm'ī-hē'drāl* [Gr. *hēmī*, half; *hedra*, a seat]: in a *crystal*, having only alternate faces developed; having only half the usual number of normal planes.

HEMILYTRA, n. plu. *hēm'ī-lī'trā* [Gr. *hēmī*, half; *elytron*, a sheath]: among certain insects, wings which have the apex membranous, while the inner portion is chitinous, and resembles the elytron of a beetle.

HEMIMETABOLIC, a. *hēm'ī-mēt-ā-bōl'ik* [Gr. *hēmī*, half; *metabolē*, change]: applied to insects which undergo an incomplete metamorphosis.

HEMIMORPHITE, n. *hēm'ī mōr'fīt* [Gr. *hēmī*, half;

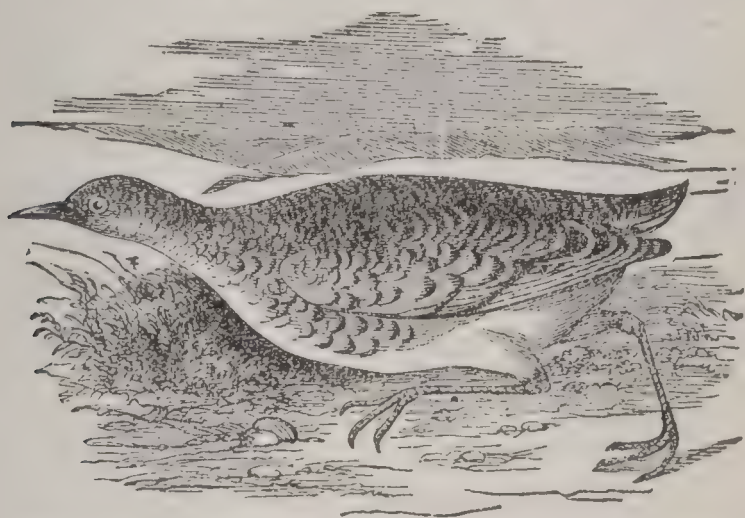
HEMIOPIA—HEMIPTERA.

morphê, shape]: a silicate of zinc forming a valuable ore.

HEMIOPIA, n. *hēm'ī-ō'pī-ă* [Gr. *hēmī*, half; *ops*, the eye]: disease of the eye in which only half the object looked at is seen: the disease is rare, and imperfectly understood.

HEMIPLEGIA, *hēm-ī-plē'jī-a* [Gr. *hēmī*, half; *plēgē*, stroke]: paralysis (q.v.) limited to one side of the face and body, usually depending on disease of the brain. It is opposed in signification to Paraplegia (q.v.)

HEMIPODE, *hēm'ī-pōd* (*Hemipodius*): genus of gallinaceous birds, nearly allied to quails, but distinguished by a more slender beak, and by the want of a hind-toe. They



Andalusian Hemipode (*Hemipodius tachydromus*).

are the smallest of gallinaceous birds, and inhabit cultivated grounds and sterile sandy plains in warm countries. One species, the **ANDALUSIAN H.** (*H. tachydromus*), is found in Spain, Italy, Sicily, Africa, and Australia. The whole length is about six inches.

HEMIPTERA, n. plu. *hē-mīp'tēr-ă*, or **HEMIP'TERS**, n. plu. *-tērz* [Gr. *hēmī*, half; *pteron*, a wing]: order of insects with four wings, a mouth formed for sucking, undergoing imperfect metamorphoses, and having the first pair of wings either of a firm membranous substance without scales, or leathery at their base, and membranous at their tips. Those with the first pair of wings of the former character are the order *Homoptera* (q.v.) of many entomologists; the latter are the *Hemiptera* proper, the section or sub-order *Heteroptera* of Cuvier and others. The wings of the H. proper in general partly overlap each other, and are horizontal or slightly inclined when at rest. Some kinds are wingless, which, however, otherwise exhibit the characters of this order. Some of the H. feed on vegetable, and some on animal juices. The principal changes which they undergo in their metamorphoses are increase of size and development of wings. They are active in all stages. Some of them are aquatic. They are most abundant in tropical countries, and some of the tropical kinds are very splendid. Examples of this order are water-bugs, boat-flies, and water

HEMISPHERE—HEMIXHEIM.

scorpions. HEMIP'TERAL, a. pertaining to; also HEMIP' TEROUS, a. -*ŭs*.

HEMISPHERE, n. *hēm'ī-sfēr* [Gr. *hēmī*, half; *sphaira*, a globe]: a half sphere or globe; sphere bisected by a plane passing through its centre; a representation of half the earth; in *anat.*, applied to each lateral half of the brain. HEM'ISPHER'ICAL, a. -*sfēr'ī-kāl*, or HEM'ISPHER'IC, a. -*īk*, containing half a sphere or globe; half-round.

HEMISTICH, n. *hēm'ī-stīk* [Gr. *hēmī*, half; *stichos*, a row, a verse]: the half of a line in poetry, or an incomplete line. HEMISTICHAL, a. *hēm-īs'tī-kāl*, pertaining to a hemistich.

HEMITROPE, a. *hēm'ī-trōp* [Gr. *hēmī*, half; *trōpē*, a turning]: half-turned: N. in *min.*, a twin crystal whose halves exhibit a reversed position to one another. HEMITROPAL, a. *hēm-ī't'rō-pāl*, in *bot.*, designating an anatropal ovule in which the raphe only extends along the back of the ovule—only half-way from the chalaza to the micropyle: see ANATROPAL.

HEMIXHEIM, *hā'mīks hīm*: village of Belgium near the Scheldt river, 5 m. s. of Antwerp. It contains a church and the once-noted castles of Calbeek and Emsdael; while at the junction of the Scheldt and Schelle-Vliet rivers, near by, is the ancient abbey of St. Bernard. Pop. (1870) 3,400.

HEMLOCK.

HEMLOCK, n. hēm'lōk [AS. *hemleac*: comp. Ger. *hammen*, to maim, and AS. *leac*, a leek, a plant—*lit.*, the herb that hurts], (*Conium*): genus of plants of nat. ord. *Umbelliferae*, having compound umbels of small white flowers, small general and partial involucre, the limb of the calyx merely rudimentary, and a compressed ovate fruit with five prominent wavy ridges and no *vittæ*. The best known and only important species is the COMMON H. (*C. maculatum*), which grows by waysides, on heaps of rubbish, and similar situations in Britain and on the continent of Europe, in



Flowers and Roots of Common Hemlock (*Conium maculatum*).
c, a flower; d, a seed.

temperate Asia and now also as a naturalized plant in cultivated districts of N. America and in Chili. It has a root somewhat resembling a small parsnip; a round, branched, hollow, bright-green stem, 2-7 ft. high, generally spotted dark with purple; the leaves large, tripinnate, of dark shining green color; the leaflets lanceolate, pinnatifid. All parts of the plant are perfectly destitute of hairs, and the stem is smooth and spotted with purple. Both the general and partial umbels have many rays. The general involucre consists of several small leaflets; the partial involucre of three small leaflets, all on one side. The whole plant has a nauseous smell, particularly if rubbed or bruised. The leaves, and sometimes the fruits, are employed in medicine. They should be gathered just before the time or at the commencement of flowering, and after the removal of the larger stalks they should be quickly dried by a heat not exceeding 120°. They should then be preserved in perfectly closed tin canisters. As, however, the dried leaves sometimes yield no *conia*, *conylai*, or *coniine* (a volatile alkaloid, which is the active principle in the plant), the fresh leaves are much more certain in their action.

The most important ingredient in H. is the *conia* which is more abundant in the fruit (seeds) than in the leaves. From 40 lbs. of the ripe but green seeds, Dr. Christison obtained two ounces and a half of hydrated conia. As it is

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volatile, it is obtained by distilling the seeds with water which contains a little potash in solution; conia then passes over with the water in the form of a yellowish oil, and when purified by redistillation, it is obtained as a colorless, transparent, oily liquid, having a specific gravity of 0.8, a penetrating, hemlock-like odor, communicating a burning sensation when applied to the tongue, and acting as a very energetic poison. It exhibits a powerful alkaline reaction, and precipitates many metallic oxides from their salts. Strong sulphuric acid causes its compound to assume first a purple-red, then an olive-green color; while nitric acid gives a blood-red color, fading into an orange. Its composition is represented by the formula $C_8H_{15}N$. Wertheim has recently discovered a second alkaloid in H., which contains the elements of two equivalents more of water than conia. The substance, whose formula is $C_8H_{17}NO$, he names *conidrin*. It may be sublimed in beautiful colorless needles, and is much less poisonous than conia.

Conia has been introduced into the *Pharmacopœia Norvegica* under the name of *Coniinum*, the dose being from one-fortieth to the one-sixtieth part of a grain. The following illustrations will give an idea of its activity as a poison: One drop placed in the eye of a rabbit killed it in nine minutes; three drops employed in the same way killed a strong cat in a minute and a half; while five drops poured into the throat of a small dog began to act in thirty seconds, and in thirty seconds more, motion and respiration had ceased. It seems to exhaust the energy of the spinal cord, and thus to cause muscular paralysis.

The uses of H. in medicine may be arranged under two distinct heads: 1. Those which depend on its resolvent and alterative powers; 2. Those which have reference to its influence over the nervous system. 1. It has been found useful in mammary tumors and profuse secretion of milk, in bronchocele, in enlargements of the liver, spleen, and pancreas, in scrofulous affections, etc., and at one time had high reputation in cancer. 2. It is useful as an antispasmodic and anodyne in whooping-cough, spasmodic cough generally, asthma, neuralgia, etc.

In large or poisonous doses it sometimes gives rise to coma (such as opium does), and sometimes to convulsions or violent delirium. Kercher relates the following singular instance of delirium from its use: Two priests ate hemlock-root by mistake; they become raving mad, and fancying that they were geese, plunged into the water. For three years they were afflicted with partial palsy and violent pain.

It may be administered internally in the form of powder (of the leaves), tincture or extract, while externally it may be applied as a soothing application to ulcers, painful piles, etc. in the form of ointment or poultice. The conia being volatile, often escapes from the powdered leaves and from the extract, and of the three preparations named, the tincture is the best. The *succus conii*, or *Preserved Juice of Hemlock*, prepared by pharmaceutical chemists, is more certain in its action than any of the pharmacopœial preparations.

In cases of poisoning by H., the evacuation of the stomach

HEMLOCK SPRUCE—HEMORRHAGE.

is the first thing to be attended to. Among the ancient Greeks, poisoning by H. was a common mode of death for condemned criminals, and thus it was that Socrates died;



Water Hemlock (*Cicuta virosa*).

a, a flower, the petals separated; b, root.

but whether the juice of the Common H. or the Water H. was used is unknown.—WATER H., or COWBANE (*Cicuta virosa*), also is an umbelliferous plant, of a genus having much vaulted umbels, a 5-toothed calyx, and almost globose fruit, each carpel with five broad flattened ribs and evident single vittæ. Water H. grows in ditches, the margins of ponds, and wet grounds in Europe and n. Asia. It has a large, fleshy white root, covered externally with fibres; an erect, much-branched stem 2–5 ft. high; tripinnate leaves, with linear-lanceolate regularly and sharply serrated leaflets, no general involucre or only a single small leaflet, partial involucre of many short, narrow leaflets and white flowers. It is a virulent, narcotic, acrid poison. Serious accidents have occurred from eating the root. Another species *C. maculata*, is common in N. America, growing in marshy places. It has a spotted stem, like that of a true H., the name of which it very generally receives in N. America. The leaves are triternate, the leaflets ternate. It is a very poisonous plant, and has been the cause of deaths.—*Cicuta* in Latin, seems to have been the name of the same plant called *Coneion* by the Greeks, but it is not known whether this or the previous plant was so denominated.

HEMLOCK SPRUCE: see FIR.

HEMODORACEÆ—HEMOGLOBINE—HEMOPTYSIS: see under HÆ-.

HEMORRHAGE—HEMORRHOIDS: see under HÆ-.

HEMP.

HEMP, n. *hěmp* [Dut. *hennip*; Ger. *hanf*; Icel. *hanpr*]: the fibres or threads of a plant of the same name cleaned and dressed, used for making coarse cloth, ropes, etc.; the *Cannābis sativā*, ord. *Cannābinācēæ*; a species of hemp so named, used in W. India under various names as a narcotic and intoxicant. **HEMPEN**, a. *hěm'pn*, made of hemp. **HEMPY**, a. *hěm'pĩ*, like hemp; fibrous. **HEMPY**, or **HEMPIE**, n. *hěm'pĩ*, in *Scot.*, one for whom the hemp grows; a rogue: **ADJ.** roguishly; romping. **HEMP-SEED**, the seeds of hemp-plants, used as food for cage-birds, and from which an oil is expressed.

HEMP (*Cannabis Sativa*): plant of the nettle family, cultivated for the fibres which surround the stem and for its seed. The fibre is similar to that of flax but is stronger and is not as soft or fine. The seed contains about 25 per cent. of an oil valuable for painting. From the juice of the plant, also from the seed, the people of warm countries obtain an intoxicating liquor. The narcotic poison hashish is obtained from the seed and a preparation from the Indian H. is often used in medicine but in unskilled hands is a dangerous remedy. In the United States the seed is fed, in small quantities, to live stock. Cooking renders it more digestive.



Hemp (*Cannabis sativa*).

A, male inflorescence; B, female inflorescence.

When the seed is allowed to ripen, H. is a very exhausting crop, and should not be grown upon a given field more than once in five years. When cultivated for the fibre alone, it is less exhausting. It is a native of a hot region, probably of India, and reaches its fullest development in such climates, after attaining a height of 16 or 18 ft. In this country, on rich land, it grows from seven to twelve ft. high. It is produced, to some extent, in nearly all civilized countries, but more largely in Russia than else-

HEMP.

where. The United States imports large quantities of the fibre every year.

H. thrives best in a rich and moist soil. The land should be plowed in the autumn and again in the spring. Manures or fertilizers should be freely used and thoroughly worked into the ground with a harrow or pulverizer. The surface must be made very fine just before the seed is sown. At the north, sowing is done from about the middle of April to the middle of June. About midway between these dates is best in ordinary seasons. At the south, earlier sowing is required. If sown broadcast, a bushel and a half of seed per acre is needed; if in drills, three pecks will suffice. The latter is the best method. Soaking the seed in water for 24 hours will hasten its germination. If sown broadcast the seed should be well harrowed in and the ground rolled. As the seed loses its vitality with age it is desirable to sow that of the previous year's growth. If older seed is used the quantity should be increased. The principal enemy of the H. plant is the cut-worm (see CUT-WORM). As the plant is vigorous and grows rapidly, it will keep down weeds and will not require cultivation.

When the blossoms turn yellow and begin to fall, usually in from 13 to 15 weeks after the seed is sown, the H. should be harvested. Until recently this was done by pulling the plants by hand but the present practice is to cut them with a heavy scythe. If not more than seven or eight ft. high a very strong grain cradle can be used. After drying for two or three days the stalks should be bound and put into stacks, which may remain until cool weather. It should then be rotted in order that the fibre may be separated from the woody stalk which it envelops and to which it tenaciously adheres. Rotting is accomplished by spreading the stalks thinly and evenly upon a grass-covered field, called dew-rotting; or by submerging them in a pond or tank, known as water-rotting. For the former method from three to six weeks are required and the stalks need to be turned once or twice. Water-rotting requires less time and gives better results. It is frequently commenced in two or three days after the plants are cut, and completed in two to three weeks. The warmer the water, the more rapidly the rotting is effected. When the woody stem will break without bending and will separate readily from the fibre, the process is finished. If spread upon the grass, the stalks should be bound and stacked. If rotted in water, they must be spread and dried before they are tied in bundles. The H. is sometimes sold from the stack to manufacturers, who separate the fibre from the waste matter by machinery. In other cases the separation is effected at the barn by means of a rude bleak which reduces the stems to short pieces and a flat wooden knife with which these pieces are whipped out of the enveloping fibre. The fibres are sometimes combed and straightened by being drawn through a hatchel made of long, sharp iron teeth set in a plank, but some manufacturers prefer to do this work in their own shops with machines designed

HEMP PALM—HEMPSTEAD-BEDS.

for the purpose. When these processes are completed, the fibre is packed in bales or boxes and sent to market.

When H. is grown for seed, a different method of cultivation should be pursued. It should be planted in hills not less than three and a half ft. apart each way, with 10 or 12 seeds in each hill, to provide for possible failure to germinate. Cultivate both ways several times during the season. Thin slightly when the plants are small. When they are 10 or 12 inches high, remove all but three stalks in a hill and bring the earth well around them with a hand hoe. It is a peculiarity of H. that the staminate and pistillate blossoms grow on different plants. When the blossoms appear, most of the former are removed, only enough being left to fertilize the seed stalks: one male plant in every other hill is sufficient. Some growers remove a much larger proportion. When the pollen has all fallen, the remainder of the male plants are cut out. The other plants should be allowed to stand until the seed is matured. They should then be cut, dried for a day or two, tied in small bundles, and placed in stacks which should remain until thoroughly cured. If allowed to become over-ripe, the seed will shell badly in the field. As it is liable to heat, the H. should be very dry when threshed and the seed spread thinly in a cool and well ventilated room. On good land 12 to 15 bushels per acre may be obtained.

HEMP PALM (*Chamærops excelsa*), [see **CHAMÆROPS**]: a palm of China and Japan, the fibre of the leaves of which is much used in those countries for making cordage. Hats are made of its leaves, and even cloaks and other garments for wet weather.

HEMPSTEAD: a former village in H. tp., Queens co., Long Island, N. Y.; on the Long Island railroad, 20 m. e. of Brooklyn. It is tastefully laid out, prettily built, lighted with gas and electricity, and contains H. Institute, 5 churches (the Presb. organized 1644; and the Prot. Episc., possessing a charter granted by George II. and communion plate given by Queen Anne), several public halls, patent-leather factory, machine shops, 2 newspapers, flour and molding-mills, steam fire dept., and 3 hotels.—H. tp. borders on the Atlantic Ocean. and contains 19 villages of which Rockaway, Pearsall's, Baldwin's Freeport, Garden City (q. v.), and Rockville Centre are the principal. The upper half of the original tp., bordering on Long Island Sound and known as N. H. tp., also contains many villages, and its village Mineola, was formerly a capital of Queens co., and the seat of the noted Queens co. agricultural fairs. H. and its neighboring villages are popular resorts of New York families and fashionable life has estab. itself in hotels along the ocean beach and on the island of Long Beach, which is near H. became a part of Greater New York, 1898, Jan. 1.

HEMPSTEAD-BEDS, n. *hěmp'stěd* [from *Hempstead* parish near Yarmouth, in the Isle of Wight]: series of geological beds, some marine, others freshwater, of **Lower Miocene** age, and of 170 ft. in thickness.

HEMS—HEN.

HEMS, *hěms*, or **HOMS**, *hōms*, or **HUMS**, *hūms* [Lat. *Emesa*]: city of Syria, about a mile e. of the right bank of the Orontes, lat. about 34° 44' n., long. 36° 43' e. It is 65 m. n.e. of Baalbek and 110 m. w.n.w. of Tadmor (Palmyra). It is clean, compactly built, and surrounded by old walls; and though no ancient buildings remain, the antiquity of the city is attested by numerous fragments of columns, by several Greek inscriptions, and the foundations of ancient baths with specimens of mosaic pavement. In ancient times it was noted for its splendid temple of the Sun, one of the priests of which Elagabalus or Heliogabalus, was raised to the imperial throne of Rome. Under the walls of H., Zenobia was defeated by Emperor Aurelian 272. In 636, the city was taken by the Saracens, when its old Semitic name H. was revived; and 1099 the Crusaders rode through its opened gates. Since then, H. has experienced many vicissitudes of fortune, all of which, however, it has survived, and is now the seat of a flourishing trade, and of several manufactures. Pop. 20,000 to 30,000, of which abt. 7,000 are Christians.

HEMSTERHUIS, *hěm'stēr-hoys*, **TIBERIUS**: 1685, Jan. 9—1766, Apr. 7; b. Groningen, Holland: he became prof. of Greek and of history at Leyden 1740, where he died. One of the greatest Greek scholars of his time, H. may be said to have created a new school of Greek philology, to which belong his distinguished pupils Ruhnken and Valkenaer. His editions of the *Onomasticon* of Pollux (1706), of the *Select Dialogues* of Lucian (1708 and 32), and of the *Plutus* of Aristophanes (1744, by Schäfer 1811), are his principal literary works. A beautiful picture of his life is given in Ruhnken's *Elogium Hemsterhusii* (Leyd. 1768 and 89), republished in Lindemann's *Vitæ duumvirorum T. Hemsterhusii et D. Ruhnkenii* (Leip. 1822). From H.'s mss., *Anecdota Hemsterhusiana* (1825) have been edited by Geel, and *Orationes et Epistolæ* (1839) by Friedemann.

HEMSTITCH, n. *hěm'stich*: a stitch in needlework, made by drawing out a few parallel threads and fastening the cross threads in successive small clusters.

HEN, n. *hěn* [Icel. *hæna*, a hen—from *hani*, a cock; *hann*, he, *hun*, she: Ger. *henne*, a hen]: the female of any kind of fowl (see FOWL). **HEN'PECKED**, a. *-pěkt*, governed by the wife. **HEN-COOP**, *-kóp*, a cage for fowls. **HEN-HARRIER**, a kind of hawk or kite—so called as the harasser or enemy of hens. **HEN'BANE**, n. *-băn* [*hen*, and *bane*], (*Hyoscy'amus*): genus of plants of nat. ord. *Solanaceæ*, having a five-toothed calyx, an irregular funnel-shaped corolla, and a capsule opening by a lid, and inclosed in the hardened calyx. The species are mostly annual and biennial herbaceous plants, and natives of countries near the Mediterranean Sea. **COMMON HENBANE** (*H. niger*), growing in waste places, and in the neighborhood of towns and villages, particularly in calcareous soils, and on the sandy shores of Scotland, and elsewhere in Britain, is an annual or biennial plant, somewhat bushy, about two ft. high; with large sinuated or sharply-lobed leaves without leaf-stalks, and large dingy-yellow

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flowers, with brownish-red or purple veins. The whole plant is covered with unctuous hairs, and has a nauseous smell, which gives warning of its strong narcotic poisonous quality. Cases of poisoning by H. are not rare, through the ignorance of quacks.



Henbane (*Hyoscyamus niger*).

The seeds contain in largest quantity the peculiar alkaloid on which chiefly the properties of the plant depend *Hyoscyamia* or *Hyoscyamine*, which crystallizes in stellated acicular crystals of a silky lustre. The symptoms of poisoning by H. are similar to those produced by other narcotic poisons, and the proper treatment is the same as in poisoning by opium. In medicine, H. is employed both externally and internally. The leaves are the part commonly used: they are gathered and quickly dried when the plant is in full flower. Fomentations of H. are applied to painful glandular swellings, parts affected with neuralgia, etc., and are often found to afford relief. An extract of H. is sometimes employed instead of belladonna to dilate the pupil of the eye. Tincture and extract of H. are often administered in annoying cough, spasmodic asthma, and other diseases requiring sedatives and antispasmodics. H. is used also to calm mental irritation and to induce sleep. For many cases, it has one great advantage over laudanum, in not producing constipation. The smoke from the burning seeds of H. is sometimes introduced into a carious tooth, to relieve toothache. The other species of H. possess similar properties. The dried stalks of *H. albus* are used by smoking in Greece to allay toothache.

HENCE, ad. *hēns* [AS. *heona*; OE. *hennes*, hence]: from this place; from this source; from this time; away; to a distance; for or from this reason. HENCE'FORTH, ad. *fōrth*, from this time forward. HENCEFOR'WARD, ad. *-fōr'wērd*, from this time to futurity. *Note*.—FROM HENCE is a form come into use, but is not to be commended.

HENCHMAN—HENDERSON.

HENCHMAN, n. *hěns'h'măn* [*haunch*, and *man*: OE. *henxman*, a groom]: a supporter; one who stands at one's haunch; a servant. *Note*.—It is said that OE. *hengest*, a horse, and *man* is a more probable derivation, thus meaning 'groom,' or one who attends to his master's horse or horses—see Skeat.

HEND, v. *hěnd*, or **HENT**, v. *hěnt* [Icel. *henda*, to seize; OF. *hancher*, to grasp or snatch at with the teeth]: in OE., to seize; to lay hold on; to surround; to mob; to overtake. **HEND'ING**, imp. **HENDED**, pp. **HENT'ING**, imp. **HENT'ED**, pp.

HENDECAGON, n. *hěn-děk'ă-gôn* [Gr. *hěnděka*, eleven, *gônă*, an angle]: a figure of eleven sides and eleven angles.

HENDECASYLLABLE, n. *hěn'děk-ă-sil'ă-bl* [Gr. *hěnděkă*, eleven; *sullábē*, a syllable]: a metrical line of eleven syllables.

HENDERSON, *hěn'děr-son*: city, cap. of H. co., Ky.; on the O. river, and the Louisville and Nashville railroad; 74 m. n. of Hopkinsville, 212 m. w.s.w. of Louisville. It is in a rich timber, coal, and salt region; has regular steamboat connection with Louisville, Memphis, and other points; ships large quantities of tobacco and grain; and contains 16 tobacco stemmeries, cigar factory, foundry, car-works, carriage and wagon factories, water-works, handsome fair grounds. 3 grist, 2 saw, and 1 planing mills, woolen and churn factories, a nat. bank (cap. \$200,000), 1 branch state bank (cap. \$334,000), 12 churches, and 3 weekly papers. Pop. (1880) 5,365; (1890) 8,830; (1900) 10,272.

HENDERSON, ALEXANDER: 1583–1646, Aug. 19; b. Creich, Fifeshire, Scotland: ecclesiastic and reformer. He was educated in the Univ. of St. Andrews, became prof. of rhetoric and philosophy there 1610, was presented to the living of Leuchars by Abp. Gladstones 1612, and after a brief period of extreme unpopularity occasioned by his Episcopal views he adopted Presbyterianism, and labored with large results in that parish 18 years. When, 1636, Charles I. attempted to force Episcopal forms on the Church of Scotland, prescribing for it a book of ecclesiastical canons, one of ordination, and a third of common prayer, H. took the lead in opposing the measure. The bishops ordered the ministers to use the new forms, the ministers united in a petition drawn up by H. to the privy council for a suspension of the orders; and a large majority of the Scotch people favoring the opposition, committees of 4 members each were appointed to represent the noblemen, gentlemen, burgesses, and ministers. These representatives, known as 'The Tables,' met in the parliament house; their meetings were at once prohibited by the king, and the delegates determining to renew the national covenant, H. wrote the bond and Warriston the legal warrant. The covenant was subscribed by several thousand persons in the Greyfriars Church, Edinburgh, 1638, Feb. 28. Copies of the document were distributed and eagerly signed in all parts of Scotland. While H. was supporting the popular measure in the n. shires, the king was forced by the wide-

HENDERSON—HENDRICKS.

spread dissatisfaction to call a meeting of the gen. assembly and parliament. The former met in the Glasgow Cathedral 1638, Nov. 21, and H. was unanimously chosen moderator; whereupon it was dissolved by the king's orders. But the body continued sitting, condemned the assemblies 1606-18 and the Service Book, excommunicated 8 bps., deposed the other 6, and prohibited the Episcopacy and the articles of Perth. H. was transferred from Leuchars to Greyfriar's Church, Edinburgh, 1639, Jan. 10, published the Remonstrance of the Nobility and Instructions for Defensive Arms, was one of the Scotch commissioners at the 'pacification' of Birks—when the king granted all the demands of the Scotch—and 1640 was elected rector of Edinburgh Univ., an office to which he was re-elected annually till his death. He drew up the 'Solemn League and Covenant.'

HENDERSON, DAVID BREMNER: an American legislator; b. in Old Deer, Scotland, 1840, March 14; came to the United States, 1846; was educated at the Upper Iowa University; enlisted in the Union Army at the beginning of the Civil war; collector of internal revenue for the 3rd district of Iowa, 1865-69; U. S. district attorney for the northern district of Iowa, 1869-71; elected to Congress, 1882, and has since held his seat by re-elections till 1902 when he declined; elected speaker to succeed Thomas B. Reed at the organization of the 56th Congress; re-elected for the 57th.

HENDERSON, EBENEZER, D.D.: 1784, Nov. 17—1858, May 16; b. Dunfermline, Fifeshire, Scotland: missionary, linguist, theologian. Born in humble life and apprenticed to a watchmaker, he early received religious impressions which led him to prepare for the ministry. He spent two years in Haldane's theol. seminary in Edinburgh, and was then chosen to accompany the Rev. John Paterson, missionary to India, but their destination was unavoidably changed to Denmark. In 1806-17 he was engaged as agent of the British and Foreign Bible Soc. distributing Bibles, publishing vernacular versions of the Scriptures, and preaching in the Scandinavian countries: 1818-23 made a missionary tour of Russia and aided the Russian Bible Soc. in translating the Scriptures into the various languages of that empire, 1825 became tutor in Mission College, Gosport, 1830 succeeded William Harrison, D.D., as prof of theol. and oriental languages in Highbury (Congl.) College; and 1852-53 was minister of a Congl. church at Mortlake.

HENDIADYS, n. *hěn-dī'ă-dīs* [Gr. *hen diā dūoin*, one by or through two]: a figure of speech in which two nouns are used instead of a noun and an adjective, as 'a mouth of wisdom' for 'a wise mouth'—'craft and subtlety' for 'subtle craft;' the same idea presented by two phrases.

HENDRICKS, *hěn'drīks*, THOMAS ANDREWS: 1819, Sep. 7—1885, Nov. 25; b. near Zanesville, O.: lawyer. He graduated at South Hanover College, Ind., 1841, was admitted to the bar in Chambersburg, Penn., 1843; and settled in Shelbyville, Ind., to practice. In 1845 he was elected to

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the legislature, 1850-52 to congress as a democrat, 1851 to the Ind. constitutional convention; was commissioner of the U. S. gen. land office 1855-59, defeated for gov. of Ind. 1860, U. S. senator and member of the committees on the judiciary, claims, public lands, and naval affairs 1863-69; was a strong but unsuccessful candidate for the presidential nomination of the democratic party 1868, defeated for gov. 1868, and elected gov. 1872; democratic candidate for vice-pres. on the ticket with Samuel J. Tilden (see ELECTORAL COMMISSION, PRESIDENTIAL) 1876. and elected vice-pres. on the ticket with Grover Cleveland 1884. He had great personal influence in his state.

HENGSTENBERG, *həng'stən-bērĕh*, ERNST WILHELM: conspicuous German theologian; 1802, Oct. 20—1869, May 28; b. Fröndenberg, in Westphalia, where his father was a clergyman. Prepared by his father for the university, he applied himself at Bonn to oriental and philosophical studies, while he was also enthusiastic in the *Burschenschaften*. Though sympathizing thus in his early years with liberal and rationalistic movements in Germany, soon after going to Basel 1823, he came under the influence of the missionary institution there, and, before he had begun the professional study of theology, was drawn into the theological tendency which he afterward represented. Going to Berlin, 1824, as theological *Privat-docent*, he put himself at the head of a rising orthodox party, and, with conscientious devotedness, made the scientific defense of their principles the aim of his labors in the university, and through the press. Though known as a theological author only by two little treatises—*Ueber d. Verhältniss d. innern Wortes zum äussern* (1825), and *Ueber Mysticismus, Pietismus und Separatismus* (1826)—he was made, 1826 extraordinary, 1828 ordinary prof.; and 1829, doctor of theology. Through the press, his influence was exerted chiefly as editor of the *Evangelische Kirchenzeitung*, begun 1827, which still combats rationalism even in its mildest forms, seeking to restore the orthodoxy and church-discipline of the 16th and 17th c. With the same view were written all his principal works; his *Christologie d. A. T.* (3 Bde. 1829-35; 2te Aufl. 1854-57); *Beiträge zur Einleitung ins A. T.* (3 Bde. 1831-39); *Commentar über d. Psalmen* (4 Bde. 1842-45); 2te Aufl. 1850); *Die Geschichte Bileams u. Seiner Weissagung* (1842); *Das Hohelied Salomonis ausgelegt* (1853); and others are devoted to the defense of the old interpretation and criticism of the Scriptures against the results of modern biblical science in Germany. H.'s influence in ecclesiastical matters also, which was very great, was employed in the carrying out of the high Lutheran dogmas of the church, of church-offices, and of the sacraments, by persecution of secretaries, by opposition to the union of Lutherans and Reformed, and by attempts to depose from their chairs Gesenius, Wegscheider, De Wette, and other rationalistic teachers in the universities. For 40 years H. was the champion of the strictest Lutheran orthodoxy. His latest works were *Evangelium des heil. Johannes* (1869); *Geschichte des Reiches Gottes unter dem Alten Bunde*; *Das*

HENGST AND HORSA—HENNEPIN.

Buch Hiob erläutert (1870). A number of his works have been translated.

HENGST AND HORSA: see ANGLO-SAXONS.

HEN-HARRIER, HENPECKED, etc.: see under HEN.

HENLEY-ON-THAMES. *hěn lī-on-temz*: town of Oxfordshire, England, on the left bank of the Thames, 35 m. w. from London. The Thames is here crossed by a handsome bridge. H. is on a branch of the Great Western railway. There are several charities, and a reading-room and valuable library, open to all ratepayers, bequeathed by Dean Aldrich of Henley, who died 1757. Malting is a principal industry; there are breweries; and there is considerable trade in corn, flour, and timber. Pop. (1891) 4,913.

HENNA, n. *hen'na* [Ar. *hinna*]: a name sometimes found with the Arabic article incorporated in the form *Athenna* or *Alkanna*; applied equally to *Lawsonia inermis* and *L. spinosa*, shrubs of nat. ord. *Lythraceæ*. They differ in little, but that one is unarmed and the other thorny, the latter being also larger. Many botanists unite them into one species, under the name *L. alba*. H. grows in moist situations throughout n. Africa, Arabia, Persia, and the E. Indies. It is cultivated in many places for its flowers, which are prized for fragrance, particularly by the Egyptian women; but still more for the sake of the leaves, which abound in coloring matter, and which, being dried, powdered, and made into a paste with hot water and catechu, are very generally used by women throughout the east to stain the nails and tips of the fingers of an orange color; also by men to dye their beards, the orange color being converted into a deep black by indigo; and for dyeing of the manes and hoofs of horses, and to dye skins and leather reddish-yellow. Powdered H. leaves form a large article of export from Egypt to Persia, and to various parts of Turkey, whence they find their way to northern countries, and even to Germany, to be used in dyeing furs and some kinds of leather. The use of H. for staining the nails appears—from allusions in ancient poets, and from some of the Egyptian mummies—to have prevailed from very ancient times.

HEN NEGAU, see HAINAUT, or HAINAULT.

HENNEPIN, *hěn'è-pīn*, LOUIS: about 1640–1706; b. Ath, Belgium: explorer. As a member of the order of Recollets of St. Francis, he performed missionary service in Italy, France, and Canada; founded a convent at Fort Frontenac 1676; became a chaplain in La Salle's exploring expedition; and reached the outlet of Niagara river 1678, Dec. 6. He then took a canoe, discovered the great cataract, offered the first mass in that region, and made his way through the great lakes to Mackenaw 1679, Aug. 26. In Feb. following he started in a canoe from La Salle's Fort Crève-cœur (Peoria, Ill.), passed down the Ill. river to its mouth, and then up the Miss. river till captured by Sioux Indians who took him to their country (Minn.) 1680, Apr., where he discovered the falls of St. Anthony and remained nearly a year. He returned to Quebec 1682, Apr., soon afterward went to Paris to publish a narrative of his trav-

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als, and settled in Holland 1697. His chief works are: *Description de la Louisiane nouvellement découverte au Sud-ouest de la Nouvelle France*, etc. (Paris 1685); *Nouvelle Découverte d'un très-grand Pays situé dans l'Amerique, entre le Nouveau-Mexique et la Mer Glaciale* (Utrecht 1697); *Nouveau Voyage dans un Pays plus grand que l'Europe*, etc. (Utrecht 1698). His claim to having explored the Miss. to its mouth has been disputed and maintained by eminent scholars.

HENNESSY, *hĕn'nĕ-sĕ*, JOHN; an American clergyman; 1825, Aug. 20—1900, March 4; b. in Ireland; came to the United States, 1847; studied theology at Carondelet Sem; labored as Rom. Cath. miss.; prof. at Carondelet Seminary, 1854, and president, 1857; afterward had charge of a parish in St. Joseph, Mo.; and became bishop of Dubuque, 1866, and archbishop, 1893.

HENNI, *hĕn'nĕ*, JOHN MARTIN, D.D.: 1805, June 13—1881, Sep. 7; Obersanzen, Switzerland: Rom. Cath. archbishop. He studied in the St. Gall and Zurich gymnasia, came to the United States as a missionary 1827, completed his studies at the Bardstown Seminary, Ky., was ordained priest 1829, Feb. 2, and appointed pastor of Holy Trinity Church in Cincinnati and vicar-gen. of the diocese 1834. In 1844 he was consecrated first bp. of the newly-created diocese of Milwaukee, 1853 consecrated his cathedral, 1875 became abp. of the new see of Milwaukee, and 1880 was given a coadjutor, Michael Heiss (q. v.).

HENOTIKON, n. *hĕ-nō'tī-kōn* [Gr. *henōtikos*, serving to unite; *henōō*, I unite]: in *chh. hist.*, formula of concord set forth by the Greek emperor Zeno, 482, by advice of Acacius, Bishop of Constantinople, to reconcile the Eutychians to the church. Being thought to favor the Eutychian party, it was annulled by Pope Justin I. 518: see EUTYCHES: MONOPHYSITES.

HENRICIANS, n. *hĕn-rīs'ĭ-ăns*: anti-sacerdotal sect, followers of Henry the Deacon, or Henry of Lausanne (or of Clugny), an eremite monk born toward the end of the 11th c., probably of Italian descent, who abandoned the cloister because of its prevalent immorality, and came from Lausanne in Switzerland to France. He declaimed with fervid eloquence against the views of the clergy and caused tremendous excitement, sometimes drawing whole congregations from their churches to follow him. For a time Henry cast his lot with Peter de Bruys, who had begun an attempt at religious reform about 1110 and who was burned by a furious mob at St. Giles 1130. Henry did not share the tenets of Peter, though agreeing with him in a crusade for reform. Peter de Bruys opposed infant baptism, inveighed against all church-buildings and demanded their destruction, and denied all sacramental character in the Lord's Supper, and all authority in the priesthood. His followers, known as *Petrobrusians*, after his violent death, joined the sect of the Henricians, whose leader, Henry the Deacon, was driven from place to place by the ecclesiastical authorities, and died in prison 1148. Remnants of the sect seem to have continued till the end of the 15th century.

HENRY I.

HENRY. *hěn'ri*, I., King of England: 1068–1135, Dec. 1 (reigned 1101–35); youngest son of William the Conqueror. When his brother, William II., was found dead in the New Forest, where they had both been hunting, in 1100, Aug. 2, with a broken arrow in his breast, Prince Henry at once seized the government, which, according to the then but imperfectly understood law of primogeniture, should have passed to his elder brother, Robert, Duke of Normandy, who was at the time in Italy, on his way home from crusading in Palestine. H. was crowned at Westminster, the third day after his brother's violent death. He instituted no inquiry regarding the death; and he successfully held the crown against his brother Robert, at first negotiating with him, and granting him a pension to resign his pretensions, but finally making war on his badly-governed duchy. Robert was defeated in a bloody battle before the walls of Tenchebray, 1106, Sep. 28, taken prisoner, and shut up in Cardiff Castle during the remaining 28 years of his life. The acquisition of Normandy, the ancient patrimony of his family, had been a point of ambition with H., as he despised England and the English; but he had some trouble in keeping it as the French king, Louis VI., and the Counts of Anjou and Flanders, took part with William, Robert's youthful son, whose virtues and misfortunes secured him friends. H., however, brought over to himself the Count of Anjou, by betrothing his only son to the count's daughter; he rendered neutral, by his elegant and fair promises, Pope Calixtus II., whose intervention in the interests of justice had been besought; and he defeated the French king and his mailed knights in the almost bloodless battle of Brenneville, 1119. Next year his successes in arms and intrigue were darkened for life by the death of his only son William, who was drowned at sea on his passage from Normandy to England, unregretted by the English, who knew of his hatred toward them, his arrogance, and his gross vices. H. himself died from a surfeit of lampreys, as he was preparing to leave Normandy, to repress an incursion of the Welsh. He was very anxious that his daughter Matilda, who had married Geoffrey Plantagenet, the boy Count of Anjou, on the death of her first husband, Henry V., Emperor of Germany, should succeed him on the throne, and had twice made the English nobles swear fealty to her; but on his death the crown was seized by Stephen of Blois, son of Adela, the Conqueror's youngest daughter.

Henry I. was styled Beauclerc, or the Scholar, in honor of his learning, which, for a king in that age of ignorance, was something beyond the common. He had great natural ability, especially in state intrigue. Law was administered with considerable fairness, and not a little rigor, during his reign, and his administrative ability restrained the spirit of rebellion which had been seething incessantly since the Conquest. The punishment of crimes during his reign was capricious and barbarous; death, the loss of eyesight (which he is alleged to have inflicted on more than one of his relatives), and perpetual imprisonment, being the most usual penalties of the law.

HENRY II.

HENRY II., King of England: 1133, Mar. 5—1189, July 6 (reigned 1154–89); b. Le Mans, France; grandson of Henry I. by his daughter Matilda, and her second husband, Geoffrey Plantagenet. His mother, assisted by her illegitimate brother, the Earl of Gloucester, in the early part of Stephen's reign, and toward its close by H. himself, had made war against Stephen, as a usurper, who had no good title to the throne. In 1153, when the rival armies were drawing near each other, a treaty for a compromise was set on foot, and in the course of it the only son of Stephen having died, it was agreed that Stephen should reign during his life, and that H. should succeed him, which he did on Stephen's death next year. He was crowned 1154, Dec 19, with his queen, Eleanor, whom at the age of 18 he had married within six weeks after she had been divorced by Louis VII. of France. She was Countess of Poitou, and Duchess of Aquitaine, in her own right. H. inherited from his father Anjou, Touraine, and Maine, and his father and mother succeeded by force of arms, in keeping and taking possession of Normandy for themselves and him; so that, by one method and another, he came to be possessed of a large portion of France as well as England. His chief rivals in power were the clergy, who could use their weapon of excommunication with terrible effect, and who being tried by their own courts were not amenable to the common laws of the realm, and were protected from the punishment due to their crimes, which were often of the deepest dye. To aid him in reducing the church to subjection to the civil power, he appointed his trusted chancellor, Thomas-à-Becket, to the see of Canterbury, and compelled him and the other ecclesiastics to agree to the 'Constitutions of Clarendon;' a set of laws enacted by a sort of prototype of a parliament, or council of the barons, and having for their object to render the crown and the civil law (such as it had grown to be) superior to the church. Becket, however, proved to be a true churchman, and the long and obstinate struggle between him and his monarch ended in his murder: see BECKET, THOMAS À. H. did penance at his grave, allowing himself to be scourged by monks; but though the 'Constitutions of Clarendon' were formally repealed, the king was ultimately successful in reducing the church to subordination in civil matters. During his reign occurred the conquest of Ireland. That country was then the home of a number of tribes or clans of the ordinary feudal type, and Pope Adrian IV., 1156, by a bull, gave H. authority over the entire island, and ordered the inhabitants to obey him. He had not leisure at the time to conquer them, but afterward, English aid being solicited by one of the Irish petty kings, Dermot of Leinster, H. gave leave to any of his subjects to aid him; and Robert Fitzstephens, constable of Albertvivi, Maurice Fitzgerald, and Richard de Clare, surnamed Strong-bow, Earl of Strigul, went over with a very few hundred trained Englishmen, and in one year conquered Ireland. They succeeded so well that H. became jealous, and recalled them; and next year (1172) he went

HENRY III.

over himself, to conquer in a royal way, and was everywhere loyally received, except in Ulster. This was the nominal conquest of Ireland, but the majority of the Irish tribes and chieftains continued to be independent barbarians for centuries.

During this reign, also, the first considerable ascendancy of England over Scotland was gained. H.'s sons, incited by their jealous mother, Queen Eleanor, rebelled against him, and their cause was espoused by the kings of France and Scotland. The latter, William the Lion, was ravaging the north of England with an army, when he was surprised at Alnwick, and taken prisoner 1174, July 12. To obtain his liberty, he stipulated to do homage to H. for Scotland, to cede forever to him the fortresses of Roxburgh and Berwick, and the castle of Edinburgh for a limited time. In the course of this filial rebellion, Henry, the eldest son, died of a fever, exhibiting great remorse, and Geoffrey was killed in a tournament at Paris. Richard, surnamed Cœur de Lion, with King Philip of France, obtained some advantages over his father. A treaty of peace was concluded between them, of which one of the stipulations was for an indemnity for all the followers of Richard. The sight of the name of his favorite son John in the list, acting upon a constitution weakened by many cares, threw the king into a fever, of which he died.

In general, H. was an able and enlightened sovereign. The barons were indeed overawed, but the monarch did not use his power despotically. Law made very great progress in his reign; circuit courts were established, and other improvements effected. The earliest writer on English law, Ranulph de Glanville, was H.'s chief justiciary. In intellect and character, H. resembled his grandfather, Henry I., but his violations of the moral law were fewer, and less heinous. Still he had some illegitimate children, his mistress, the fair Rosamond, being the mother of two that are remembered: William Longwood, Earl of Salisbury, and Geoffrey, who became Abp. of York, and who was faithful to him when his four legitimate sons took up arms against him.

HENRY III., King of England: 1207, Oct. 1—1272, Nov. 16 (reigned 1216–72); grandson of Henry II., and eldest son of King John. He succeeded to the throne at his father's death. He inherited his father's weakness, and he managed everything ill both at home and abroad. A war with France cost him Poitou, and might have been more disastrous, but for the virtuous disposition of the French king, Louis IX., commonly called St. Louis. In his boyhood, under the direction of the judicious Earl of Pembroke, H. ratified the Magna Charta; and he did so in manhood, to appease the discontent of his parliament, and obtain allowances of money. But he kept no vows. He was beset with favorites chiefly from the country of his queen, Eleanor of Provence, and he allowed exorbitant exactions on the part of the clergy and the pope. His misrule roused the people and the barons in parliament, headed by his brother-in-law, Simon de Montfort, Earl of Leicester, who

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forced him to transfer his power temporarily to a commission of barons. He agreed to this by the provisions of Oxford 1258. The barons were somewhat tardy in reforming the state, and the king desired to regain a power which he alleged, with truth, had been taken from him by compulsion, though wearing the appearance of free-will. The question of the validity of these provisions was submitted by both parties to St. Louis of France, whose conscientiousness was such that foreigners could trust him. He annulled the provisions. Leicester and his party disregarded their agreement to be bound by his judgment, and took up arms against the king. They defeated him, and took him prisoner in the battle of Lewes, 1264, May 14. The battle was followed by an agreement called the Mise of Lewes, more humiliating to the king than the provisions of Oxford. Leicester, being virtually king, summoned a sort of parliament; and to extend his popularity, already great, he intimated that boroughs should be represented, and this kind of representation was realized in embryo for the first time in English history. But his supremacy did not last long. Within a year, the powerful Earl of Gloucester deserted his party, and enabled Prince Edward, the son of the king who had been taken prisoner at Lewes, to escape from captivity. They led an overwhelming army against Leicester, who was defeated and slain at Evesham, 1265, Aug. 4. At the king's death, he was succeeded by his son Edward. The weakness of H. and his father had allowed the development of the power of the barons, and the counterpoise of these two forces, regal and aristocratic, was approached in these reigns by a method which has developed into the British parliament. Statute law dates from the time of Henry III.; the 'Provisions of Merton,' passed in the 20th year of H.'s reign, being the first enactment on the English statute-book.

HENRY IV., King of England: 1366-1413, Mar. 20 (reigned 1399-1413); only son of John of Gaunt and of Blanche, daughter of Henry, Duke of Lancaster. He usurped the throne on the deposition of his cousin Richard II. by the parliament. He was surnamed Bolingbroke, from the place (in Lincolnshire) where he was born 1366, and had no valid title to the crown, or pretense of it, except that he was the son of the fourth son of Edward III. The peace of his reign was disturbed by the Welsh, under Owen Glendower (q.v.), and by the Scotch, who were defeated, however, at Nesbit Moor 1402, June 22, and at Homildon Hill, Sep. 14. Henry Percy (surnamed Hotspur), conqueror in the latter engagement, and his family shortly after broke with the king, and leagued with the Scotch Earl Douglas and Glendower against him: but this coalition was destroyed by the battle of Shrewsbury 1403, July 21. Other two insurrections followed, which were easily suppressed. The king became afflicted with leprosy and epilepsy, and died of a fit in Westminster Abbey, in the 47th year of his age, having found a usurped crown a heavy burden, even for a strong head. The parliament exercised great and unwonted powers in the reign of this

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king, who had at least the wisdom to see, that for the maintenance of the government which he had usurped, something of the nature of a constitutional basis was requisite.

HENRY V., King of England: 1387, Aug. 19—1422, Aug. 31 (reigned 1413–22); b. Monmouth (whence his surname); son of Henry IV. whom he succeeded. In his youth he had acquired great military distinction in operations against Glendower, and after his military work was ended by his father's jealousy and distrust of him, he became noted almost equally for dissipation. But when he became king (1413, Apr. 21), he shook himself in great measure free of bad habits and companions, and in an endeavor at the outset of his reign to be both just and generous, he liberated from the confinement in which his father had placed him the young Earl of March, who was the true heir to the crown, and restored the son of Hotspur to the lands and honors which Hotspur had lost by rebellion. He paid a tribute to the orthodoxy of the age, by persecuting the Lollards by fire and halter. The great effort of his reign was an attempted conquest of France, in which he virtually succeeded. He had no right to the French crown; but in these days of usurpation and unsettled laws of succession, when might and right were practically identical, he seems to have brought himself really to believe that he had a right. In his first campaign to vindicate it, he besieged and took the town of Harfleur, and gained the battle of Azincourt (q.v.), 1415, Oct. 25, against such enormous odds as to make his victory one of the most notable in history. Two years later, he again invaded France, and made Normandy once more subject to the English crown. An incapable king and civil discord there aided him greatly. 1420, May 20, there was ratified at Troyes 'perpetual peace' between H. and the French. H. demanded and had conceded to him the regency of France, the eldest daughter of the king and queen to be his queen, and the succession to the French crown on the death of the king. He had hardly returned to England, and been married to this French princess, Catherine, when the defeat at Baugé, 1421, Mar., of his brother the Duke of Clarence, whom he had left gov. of Normandy, by a force consisting largely of Scotch, and commanded by the Scotch Earl of Buchan, who killed the duke with his own hand, rekindled the hopes of the French, who supported the contention of Charles the dauphin against the treaty of Troyes, to which he had not agreed. H. returned to France for a third campaign, and his wonted success in arms was following him, when he was seized with illness, of which, after one month, he died, in the 34th the year of his age, leaving an infant to succeed him, and a splendid reputation for all those qualities that constitute a magnanimous monarch.

HENRY VI., King of England: 1421, Dec. 6—1471, May 21 (reigned nominally, 1429–61); b. Windsor; only child of of Henry V. and of Catharine of France. As he was not

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quite nine months old when his father died, his uncle John, Duke of Bedford, was appointed to govern France and another uncle, Humphrey, Duke of Gloucester, to be 'Protector of the realm and Church of England,' with a counsel appointed by parliament to aid and control him, the parliament declining to appoint him regent, though the late king had desired it. The incapable Charles VI. of France having died, his son the dauphin assumed the title Charles VII., and went on fighting with the English. His army, commanded by the Scotch Earl of Buchan, who had been appointed constable of France for his victory over the Duke of Clarence in the previous reign, and consisting of 14,000, half Scotch and half French, was almost annihilated by the English under Bedford, at Verneuil, 1424, Aug. 27. The Scotch auxiliaries ought not to have been there, as peace had been made with the Scots a year before, and their young king, James I., had been set at liberty, after a captivity of 20 years, and had returned to his kingdom with Lady Jane Beaufort, daughter of the Duke of Somerset, and relation of the royal family, as his queen.

The victory of Verneuil was the last great success obtained by the English in France, and their power, which only force could support or justify, gradually crumbled down. In 1425, they laid siege to Orleans, but the siege was raised next year by the French, inspired by Joan of Arc (q.v.); and though she was burned as a witch by the English 1431, their power continued to decline. Normandy was completely lost by the fall of Cherbourg 1450; and ultimately, 1453, they were expelled from all France (Calais excepted), greatly to the advantage of both that country and England.

Disputes between Gloucester, the regent, and his uncle, the powerful Bp. of Winchester, as well as war with France, prevailed during the minority of the king. As he grew up, he manifested no tendency to either vicious or intellectual activity. He inherited, in fact, the imbecility of his grandfather, Charles VI. of France. In 1445, the weak king found a wife in the strong-minded Margaret of Anjou; and 1447 the Winchester party, supported by her, succeeded in having Gloucester thrown into prison for high-treason, where he was soon found dead in his bed, without external mark of violence, but most likely murdered, as Edward II. had been, by thrusting a red-hot iron through his bowels. Winchester did not long survive his nephew and rival; and 1450 the Duke of Suffolk, the queen's favorite minister, being impeached by the commons, was condemned to be banished from the kingdom, but was shortly afterward taken, and executed on board one of the king's ships. The want of strength in the king, as well as in his title to the crown, was an invitation to every form of faction to display itself. Jack Cade, an Irish adventurer, who pretended to be a Mortimer, obtained temporary possession of London; but the citizens overcame him and his pillaging followers, and he was taken and beheaded in a garden by the sheriff of Kent. The true representative of the Mortimers was Richard, Duke of York, and he was

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One of the unquiet spirits of the reign. As a descendant of Lionel, Duke of Clarence, third son of Edward III., his title to the crown was superior to that of the king, who was descended from the Duke of Lancaster, fourth son of that monarch; and he laid claim to the crown with more or less openness, according to circumstances. His influence and address was so great that 1454, on the occasion of the king's weak mind being entirely eclipsed, he was appointed protector by parliament. On the king's recovery he was indisposed to give up his power, and levied an army to maintain it. 1455, May 22, the battle of St. Albans was fought, and the Yorkists were victors: 5,000 of the supporters of the House of Lancaster being killed, the Duke of Somerset, the queen's favorite minister for the time, being among them; and the king himself being taken prisoner. This was the first of 12 battles between the houses of York and Lancaster, in the wars commonly called the Wars of the Roses, from the emblem of York being a white rose, and of Lancaster a red rose. (For a brief account of the struggle, see EDWARD IV.). In his cradle he was proclaimed king of both France and England; but he lost both, having in intellect scarcely advanced from his cradle all his days, though throughout amiable and of good intentions.

HENRY VII., King of England: 1456, Jan. 21—1509, Apr. 22 (reigned 1485–1509); b. at Pembroke Castle, the seat of his father, the Earl of Pembroke. H. was the conqueror and successor of Richard III. His father, Edmund Tudor, was son of Owen Tudor, and of his wife Queen Catharine, widow of Henry V: his mother was granddaughter of John of Gaunt, parent of the house of Lancaster, and through her he derived his right (such as it was) to the crown. He was, indeed, the nearest heir, after Richard III. had murdered his nephews, the sons of Edward IV., except their sister Elizabeth, and Richard himself. The popular detestation against Richard's crimes was so great in England, that H. while residing abroad and bearing the title of Earl of Richmond, was invited to invade England, and rescue it from the tyrant. 1485, Aug 7, he landed at Milford Haven, and marched across the country to Bosworth, Leicestershire, where a battle took place Aug. 22, in which Richard was slain. H. then ascended the throne. His reign was troubled by several imposters claiming the crown: first, Lambert Simnel, a joiner's son, who professed to be Earl of Warwick, was proclaimed king in Ireland, but was defeated at Stoke 1487, taken prisoner, and turned into a scullion in the king's kitchen by H., who had a talent for turning everything to the most profitable purpose; second, Perkin Warbeck, who pretended to be the boy Duke of York, who had *not* been murdered in the Tower by Richard III., and was patronized by the Duchess of Burgundy, and supported by James IV. of Scotland, but was finally captured; and third, Ralph Wulfurd, who also pretended to be Earl of Warwick, but did not succeed in carrying his enterprise far, being almost at once taken and hanged 1499. In this year H., apparently to free himself

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from further trouble from pretenders, had Warbeck whom he had pardoned, and the true Earl of Warwick, a youth who had known only captivity all his days, convicted of a plot to recover their liberty, and put to death. The execution of the latter is the chief blot in H.'s conduct, but his execution of Lord Stanley, who had helped him to the throne, also showed a callous heart. Indeed, this king was cunning and selfish, though prudent and not intemperate in revenge or in any vice except avarice, which led him to sell offices and pardons, commuting sentences passed by his corrupt and infamous exchequer judges, Empson and Dudley. His avarice kept him from engaging in foreign war, a very small quarrel with France being all that he attempted in that way. It kept him also from returning the dowry of Catharine of Aragon, who had married his son Arthur, Prince of Wales, a boy of 14, just before he died, and led him to betroth her to his next son, who became Henry VIII., a betrothal from which flowed most important consequences. He married his eldest daughter, Margaret, to James IV., of Scotland, foreseeing that it might bring about a union of the crowns; and this was one of the most fortunate and prudent schemes of his reign. His wife having died, he was engaged looking out for another for himself, with a large dowry, when he died of consumption. Bacon wrote a history of his reign, in which he represents him as a wise king, but does not conceal his avarice, explaining it rather by observing that the necessities and shifts of other great princes abroad set off to him the felicity of full coffers. Hume reckons his reign 'the dawn of civility and science' in England. Bacon says that in it 'justice was well administered, save when the king was partie.' Some fresh light is thrown upon this and the preceding reign by the recent publication of state papers.

HENRY VIII., King of England: 1491-1547, Jan. 28 (reigned 1509-47); second son of Henry VII. and Elizabeth of York. On the death of his elder brother Arthur 1502, he became heir-apparent to the throne. In his 12th year, he was betrothed to his brother's widow, Catharine of Aragon, sister of Philip I. of Spain, thus early commencing a union afterward so fertile in evil-fortune. On his father's death, 1509, H. was found to possess many accomplishments, with no practical ability. Leaving Dudley and Empson, the instruments of his father's economic extortions, to fall a sacrifice to popular indignation, he proceeded to squander his treasures to his own high satisfaction, and to the great content of his people. He indolently allowed his ministers to manage everything for him, even to his marriage with Catharine. But though he knew nothing of the foreign relations of his kingdom, he could speak several languages with ease; and though he despised domestic business, never was there a monarch who presided more gracefully in the court, or behaved more gallantly at the jousts or in the hunting-field. His tastes were otherwise innocent. He was passionately fond of music and of display, and he indulged in no other excess than that of physical exercise, sometimes, it is said, exhausting four or

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five horses in the field in one day. It is especially noteworthy that the early years of the king were spent with scarce a stain on the purity of his life.

For the first 20 years of his reign, England had no reason to be dissatisfied. The period, indeed, was not eventful. In the beginning of it (1513), there were two short wars—one with France, in which Terouenne and Tournay were taken, and one with Scotland, in which the victory of Flodden was won. The following years were of that calm which comes before the storm. Wolsey was then minister, and from 1515, when he was made Abp. of York and chancellor, till his fall 1529, he was wholly responsible for the government, and it was the best governed portion of H.'s reign. The foreign policy, it is true, was somewhat tortuous, guided to some extent, perhaps, by the aspirations of the cardinal to the triple crown; and it may be that, in his home-government, Wolsey often exhibited a jesuitical preference for accomplishing honest ends by dishonest means. The country, notwithstanding, was kept free from foreign embarrassments, and, at home, justice was administered.

Of the king, it cannot be said that during this period he did anything of consequence. When satiety and diminished means had checked the pursuits of his youth, he had betaken himself to those well-known theological studies which earned for him (1521) the honor of Defender of the Faith. His book, in defense of the seven sacraments, against Luther, though a work of some erudition, contributed nothing to the solution of the questions which it discussed. Its timidity in examining received opinions was accompanied by corresponding vigor in denouncing those who, possessed of more courage, had proceeded from examination to dissent.

It is impossible not to connect these theological studies with the origin of the suit between H. and Catharine. The joyous temperament of H. had passed away, and in its place had come discontent and gloom. In his now superstitious mind, the fancy dwelt that the early deaths of all his male children had been the judgment of Providence on some sin. From these dark thoughts the queen had not the power of weaning him. Older by six years than he was, her beauty had faded, and, haughty in her manners, she exacted all the stately etiquette of the Spanish court from one who had at no time felt for her more affection than was due to a bride selected for him by others. The nation, too, had grown dissatisfied with the union. The prospect of a succession left to be disputed around the person of a girl—the Princess Mary, who was the immediate heiress to the throne—was viewed with anxiety. Men remembered the horrors of the wars of the Roses, and feared that their children might see them repeated. The doubt as to the validity of H.'s marriage with his brother's widow, which had been started at the time of its celebration, was one certain to be revived on the slightest occasion. A strange mixture of public spirit, religious or superstitious feeling, discontent, and selfish desire, now determined H. to seek a divorce.

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In suing for the divorce, the king unexpectedly found a zealous assistant. Wolsey saw in it a means of detaching England from the alliance with Spain, odious to him as the power that thwarted his ambition and ruled the papacy while pretending to obey it. Already his acute mind saw that the influence of the priesthood was decaying. Enthusiast as he was, he believed he could restore it. While sounds of reformation were echoing from Germany from beyond the walls of the church, Wolsey, almost alone in England, saw the danger; but he believed there was strength enough within the church to accomplish her own amendment, and he trusted now that the lost affections of the people might be brought back by a gracious exercise of the dispensing power, freeing them from a visible danger. Already the active schemer had arranged that, when the work was done, the king should marry a daughter of France, converting an old enemy into a strong ally. With such ends in view, Wolsey (1527) prosecuted the divorce before Clement.

The pope found himself in difficulty. On the one hand, Francis I. supported England; on the other Charles V. threatened. Clement pursued the traditional policy of Rome, and temporized. To gain time, he issued a commission to Cardinal Campeggio and to Wolsey to try the question. Meanwhile, Wolsey's fair projects were rendered impossible. Anne Boleyn had been for many years about court, and, when H.'s conscience grew too scrupulous to permit his cohabiting longer with Catharine, Anne lived constantly with him. When the king announced his intention of marrying her, Wolsey's desire for the divorce was at an end. The connection promised little to the nation, and he himself had every reason to dislike her, as her relatives belonged to those reformers who sought reform from without, and as such religious sympathies as could find a place in her frivolous mind leaned also to the new learning. He was now as anxious to procrastinate as Clement. The legates' court had been opened, argument had been heard; but on one excuse or another, judgment was delayed till the changeable Clement revoked the commission, and (1529) advocated the cause to Rome.

The revocation of the papal commission to try the divorce question virtually ended the papal power in England; and the steps that follow were merely the working out of inevitable results. Wolsey, suspected on the best grounds of having thwarted the divorce, was deprived of power, and a new ministry was formed (1529, Oct.), in which, for the first time, laymen held the highest places. Sir Thomas More was chancellor. The chief adviser of the king was Wolsey's old servant, Thomas Cromwell (q.v.). Parliament was called, and the members, finding that royal approbation was now given to their complaints, made out a formal list of grievances against the clergy. Their humble petition to his majesty set forth how the bishops cared for nothing but the episcopal revenues, and how they converted everything, from the powers of the diocesan courts downward, into a machinery for money. The king

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solemnly sent the document to convocation, and while the reply was under consideration, the commons proceeded. Bills were passed, with little opposition, dealing with what were wont to be thought purely ecclesiastical matters, such as fixing the fees to be exacted in the probate courts, and abating some peculiarly obnoxious imposts made in performing the last ceremonies for the dead. Parliament touched the clergy more closely still when they forbade them to follow secular employments or to hold pluralities, and enjoined them to live in their parishes and perform their duties. These bills passed the lower house with little opposition; in the upper house, where the spiritual lords were numerous, they passed with difficulty. The king gave his assent willingly. When the bills became law, they were received by the people with great satisfaction.

Though these measures were significant enough of what might follow from the pope's refusal, the pope still delayed. Time was suffered to wear on, and nothing made progress except the unpopularity of the clergy. Rome still showing no symptoms of yielding, the king's political necessities again made him a reformer, and that of a very unscrupulous kind. He imposed a heavy fine on the clergy, under an old statute, for having recognized the legatine authority of Wolsey without express royal sanction. Going still further, the Defender of the Faith declared himself the head of the church, and induced the clergy to recognize the title in consideration of his graciously remitting a portion of their fine (22 Hen. VIII. c. 15).

Parliament having again met (1530), advantage was taken of the king's disposition still more to limit the clerical power. The clergy had long ago forced the state to give up to them the right to try their brethren when accused of crimes. Their theory was that he on whom consecration had wrought its mystic office was too high for the secular arm. The practice was that every one who claimed the character of clerk, from the highest dignitaries of the church to the crowds of mendicant friars, escaped with small fines after committing the gravest crimes. Parliament was thought to have gone far when it enacted that all below the rank of priest should be dealt with by the ordinary courts of the realm. The same parliament passed other acts, regulating the jurisdiction of the ecclesiastical courts, and making stricter provisions against bequests to the church.

These measures, bold and unusual as they were, affected Rome only indirectly. As it was evident that something to be more closely felt was requisite, one of the pope's highest and most lucrative privileges was attacked. The pope had long maintained that no high ecclesiastical dignity could be conferred without his approval; and in return for granting it, he received the first year's fruits of the benefice. These payments, called annates, amounted to a large sum, increased even beyond its legitimate amount by the dishonorable expedient of sanctioning the appointment of none but very old men. A bill passed both houses, abolishing these payments (23 Hen. VIII. c. 20). To make

the measure serve its purpose more effectually, power was given to the king to call it into effect at any future time, while the hope was privately held out that this power would not be exercised if the divorce were granted.

While such measures were being passed, it may be believed that Sir Thomas More held office with pain and reluctance. Finding at last his influence powerless to restrain the advancing tide of secularism, he resigned, and a ministry was formed (1532) of which Thomas Cromwell was now the nominal as well as real head. The new ministry were prepared to push measures of reform as far as the temper of the king and the nation would permit. They desired nothing better than an open rupture with Rome. H. on the other hand, exhausted every effort of diplomacy to preserve the alliance with the church. Embassies, intrigues, plots of all kinds, in Paris and Rome, abounded in endless confusion at this time, making it impossible to determine the immediate cause of the separation, which had long since become certain to ensue.

In the beginning of 1533, H., either impatient at the long delay, or as others say, and as the dates render not improbable, discovering that his illicit intercourse with Anne Boleyn had resulted in her pregnancy, was privately married to her. Within three months afterward, the marriage was made public; and to complete matters, Cranmer, recently appointed Abp. of Canterbury, held a court, as the highest ecclesiastical authority in England, and pronounced sentence of divorce, declaring the marriage of H. and Catharine to have been null from the beginning. In England these doings were accompanied by much rejoicing, and the king's former taste for pageantry revived in the magnificent ceremonial of crowning his new queen.

The news produced other effects in Italy and Germany. When the news of the marriage reached the Vatican, H. was cited to appear before the papal court. He refused, and appealed to a general council. When Cranmer's sentence reached Rome, the pope at once declared it illegal, and soon afterward almost closed the door for further negotiation by rejecting the appeal to the council. The next steps on each side were taken almost simultaneously. The English parliament met, and under Cromwell's guidance, far outdid its predecessors. It passed an act entirely abolishing the papal authority within the realm (24 Hen. VIII. c. 12), giving the king, as on a former occasion, power to call the act into operation when he pleased. It then settled the succession on the issue of Anne Boleyn, to the exclusion of that of Catharine. Scarcely had these measures passed, when news came from Rome that the pope had pronounced judgment in the long pending divorce case, finding H.'s marriage to Catharine to have been valid. On the day following, H. called into operation the act abolishing the pope's authority.

H. having as yet done comparatively little to forfeit his early popularity, had the popular sympathy in the steps taken against those of his subjects disaffected with these changes. Among these steps, however, were some not

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easily defended, even according to the standard of the times. Minor victims fell unheeded, but all Europe was shocked when More and Fisher (Bp. of Rochester) were put to death for refusing to acknowledge the new succession, and to admit the king's right to the headship of the church. Even Henry's ally, Francis I., remonstrated. The worst effect of the cruelty was the alienation of the German Protestants, who ever afterward held aloof from H. in spite of all Cromwell's efforts to cement an alliance. After this and similar acts, not infrequent, it may be said that H. never again received human sympathy. He pursued his course, however, aided by those from whom the dust of the conflict concealed his cruelty.

The state of the monasteries having long been a public scandal, Cromwell (1535) sent a commission to examine them. Acting on the reports of the commission, parliament abolished the smaller monasteries, which happened to be at once the weakest and the worst (27 Hen. VIII. c. 28). The disbanded monks made a large addition, both directly and indirectly, to the ranks of the disaffected; and to create further discontent, the swarms of vagabonds who had subsisted on the monastic alms were suddenly thrown for support on the yeomen.

The disaffection burst out in the rebellion known as the Pilgrimage of Grace (1536). Crowds who had collected in Lincolnshire with hardly a definite aim, dispersed on a promise of redress in a parliament to be held at York. Redress, however, came not, and the crowds again gathered, this time under more skilful leaders, and with more definite purposes. The king's forces sent against them were insufficient. The whole north of England was in the hands of the rebels. Their grievances were a strange medley. Complaints of the law regarding the tenure of land were mixed with complaints that low-born men (such as Cromwell) advised the king, that the monasteries were being dissolved, and that the old faith was being altered. H., through certain commissioners, again negotiated with the insurgents, and terms were agreed on, the most important of which was a general amnesty, the benefit of which, however, Aske and the other leaders did not receive. The suppression of this rebellion was followed by the dissolution (1537) of the larger monasteries (31 Hen. VIII. c. 13.)

In the midst of these civil commotions, two events took place, both bearing on the Reformation, but of very different import. An order in council (1537) appointed the English translation of the Bible to be placed in every church, that all might read it. But as if to correct the idea that everyone was thus to have the right of judging for himself in religious questions, an act of uniformity was passed. H. having now broken with many old professions, reduced his new professions to a creed, to be enforced by penalties, if more rational means should fail to commend it to the nation. Certain articles of religion were drawn up, and after some modifications were framed into those known as the 'bloody six articles.' The statute (31 Hen. VIII. c. 14), containing these articles—named with much simplicity,

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'An act for abolishing diversity of Opinions'—is very brief, but very formidable. The doctrines were substantially those of the Rom. Cath. Church. The articles made no pretensions to form a complete or systematic creed; they embodied the points as to which most conflict of opinion prevailed; and formidable, indeed, were the sanctions enforcing them. Whoever denied the first article (that embodying the doctrine of transubstantiation) was to be declared a heretic, and burned without opportunity of abjuration; whoso spoke against the other five articles should, for the first offense forfeit his property; and whosoever refused to abjure his first offense, or committed a second, was to die like a felon. To this act Cromwell himself fell a victim. He had been silent in face of the combination which carried it; but having secretly used all his influence as a member of government to thwart its execution, by staying proceedings and giving pardons, he lost H.'s confidence, and was put to death.

The last years of the reign of H. were disturbed with small wars with Scotland and France, inimical to progress. He died unhonored, unmourned; yet few rejoiced, for his policy had left England so divided at home, so friendless abroad, that no man could look with confidence to the future.

The character of H. has of late been discussed at greater length than the subject deserved. The mere recital of the occurrences of his private life is sufficient to justify most of the infamy which tradition has attached to his name. The divorce of Catharine and the marriage of Anne Boleyn (q.v.), have already been told. Within a short time after the birth of the Princess (afterward Queen) Elizabeth, H.'s affection for Anne ceased. He suspected her—not, it must be admitted, without ground—of adultery, and, after a hurried trial, had her condemned and beheaded (1536). On the day after the execution, he married Jane Seymour, against whom nothing more is known than that she was the king's partner in this revolting proceeding. Jane Seymour died (1537) in giving birth to Edward VI. The story of Anne of Cleves follows. The marriage, a political one, arranged by Cromwell to connect H. with the German Protestants, was unfortunate from the beginning. H. was deceived as to her personal attractions, and (1540) obtained a divorce to free himself. His fifth wife, Catharine Howard, was (1541) within a few months divorced and beheaded for an adultery well-enough established. His sixth wife Catharine Parr, survived him, and so the catalogue ends. Passing from the domestic circle to that of his immediate associates, H. is found as incapable of friendship as he was either of feeling or of evoking love. He had three great ministers—Wolsey, More, and Cromwell—all men of high talent and worth, all on terms of closest intimacy with the king, yet all in the hour of need thrown aside. Disease and a broken spirit saved Wolsey from a worse fate; but it is little wonder that every Rom. Catholic should detest the memory of him who sent More to the scaffold for adhering to opinions which he himself had held shortly before, or



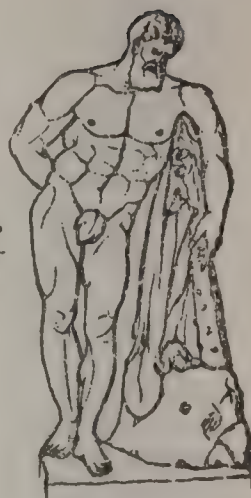
Henna Plant (*Lawsonia inermis*).



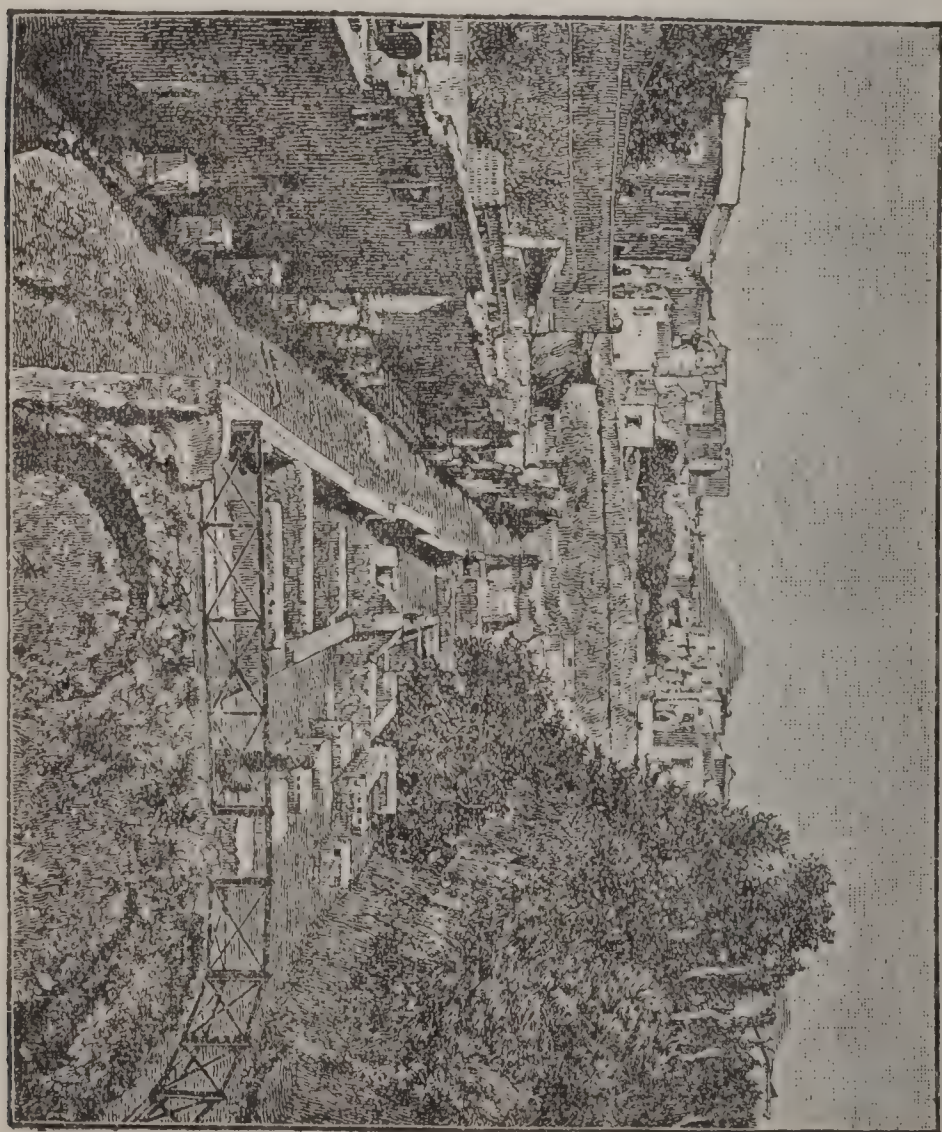
Heptandria.
— Flower of Horse-
chestnut.



Hemitropal
Ovule.



Hercules.



General View of the Excavations at **Herculaneum**.

HENRY I.—HENRY II.

that Protestants should execrate the memory of the man who violated justice and consistency to put to death the first great Protestant minister. If such were the mercies that H. vouchsafed to those who were with him, it may be easily imagined how he dealt with those who were against him. Claims of political necessity cannot excuse the cruelty with which he persecuted every relative of Cardinal Pole, from the aged Countess of Salisbury to inferior victims. It may, however, be safely admitted, that tradition has exaggerated H.'s cruelties—that there is no truth, for example, in the tale which gives 73,000 as the number of executions in his reign; and it may be further admitted, that he did not wantonly commit murders—that he had always before him in his crimes some object, either of misconceived justice, or of policy; but after allowing for everything, enough remains to explain the universal detestation in which Protestant and Rom. Catholic have combined to hold his name. He was naturally sensuous, strong-willed, and fickle; and when the easy gayety of his youth departed, the baser elements of his character manifested themselves in unrestricted force. His reign stands in history as an era in which great reforms were introduced in England; but it is not evident that these were to be credited to the king's sagacity, still less to his religious principle.

HENRY I., King of France: 1005-60 (reigned 1031-60); son of King Robert and of Constance of Aquitaine, and grandson of Hugh Capet. He was associated with his father in the govt. for 4 years before his accession; and when he came to the throne he found a formidable rebellion of the chief feudal nobles that had been fomented by the mother, who had hoped for the succession of her youngest son Robert. Constance allied herself with the rebellious nobles, and H. was forced to seek a refuge at the court of Duke Robert II. ('the Devil') of Normandy. With the assistance of the duke, H. conquered the rebellion, and on the death of his mother, 1032, gained the good will of his brother Robert by giving him the duchy of Burgundy. After the death of Robert of Normandy H. made a league with the Count of Anjou and invaded Normandy, and on the defeat of his brother Eudes at Mortemer hastily withdrew his own army from the field; and acknowledging his failure to weaken the Normans, made a treaty of peace. His eldest son Philip was crowned as joint-king 1059.

HENRY II., King of France: 1519-59, July 10 (reigned 1547-59). He succeeded his Father, Francis I. He married Catharine de' Medici 1533. The money which his father left was rapidly squandered among his favorites and mistresses. A revolt in Guienne, where the people had risen against the *gabelleurs*, or collectors of the salt-duty, was the first event that roused the king and court from their slothful ease. This disturbance was, however, speedily put down by Montmorency. Through the influence of the Guises, whose sister, the dowager-queen of James V., sought the aid of France to support her against the ambitious designs of the English government, a French

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alliance was cemented with Scotland, and war declared against England, which began 1550 with the recovery of Boulogne, and ended 1558 with the taking of Calais, after that city had been 210 years in the hands of the English. While the king tried to put down heresy with fire and sword at home, he strangely made treaties of alliance with the German reformers, and sent an army of 38,000 men to aid Maurice of Saxony against the emperor; and taking the command in person, made himself master of Toul and Verdun, while Montmorency, through the treachery of the garrison, seized upon Metz. After the abdication of Charles V. (1556), and the division of his vast empire between his brother Ferdinand and his son Philip II., H. seized the opportune occasion of attacking the Netherlands and Italy before Philip II. had time to consolidate his newly acquired powers, but the results of this step were disastrous to France at every point. In Italy, the attack on Naples, made by Guise at the head of 20,000 men, utterly failed through the pusillanimity of the pope, and the energetic advance of Alva; while in the Low Countries, the French under Montmorency sustained a total defeat, 1557, at St. Quentin, where the flower of the French chivalry were either slain or taken captive by the troops of Philip, commanded by Philibert-Emmanuel, Duke of Savoy. These reverses were followed by the treaty of Château-Cambresis (1559), in which H. agreed, in exchange for the restoration of Ham, St. Quentin, and Castelet, and the liberation of Montmorency, to resign nearly all his conquests in the Low Countries, Piedmont, and Southern Italy, including 190 fortresses and strongholds. Shortly afterward he was mortally wounded by accident in a tournament by Count Montgomery, Scottish nobleman, captain of his guard.

HENRY III., King of France: 1551-1589, Aug. 2 (reigned 1574-89); third son of Henry II. and of Catharine de' Medici. He succeeded his brother Charles IX. 1574. On the death of the Constable Montmorency, he received the chief command of the army, and his first campaign, fought in his 16th year, was signalized by two decisive victories over the Protestants at Jarnac and Moncontour. In 1573, the intrigues of the queen-regent secured to him the election to the vacant throne of Poland. He failed, however, to secure the attachment of the Polish nobles; and on receiving tidings of his brother's death, he fled by night from Cracow, and on his return to France was proclaimed king of that country. His mother and the Guises had little difficulty in persuading him to continue the religious civil war. The union of the Protestants with the party of discontented nobles, headed by the king's brother, the Duke d'Alençon, compelled the alarmed sovereign to grant the former the free exercise of their religion, and various other rights. This exasperated the Rom. Cath. party, who, headed by Henry of Guise, formed the confederation known as the *Sainte Ligue*, the object of which was not merely to assert the undivided supremacy of Rom. Catholicism, but also to secure the reversion of the throne to Guise, and

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civil war again and again burst out with renewed violence.

H. availed himself of his intervals of quiet to indulge his own vicious propensities; and while his mother ruled the state, and the Guises were undermining his throne, his days and nights were spent in an alternation of dissolute excesses, and the wildest outbreaks of fanaticism. One day he might be seen passing, to the sound of music, through the streets of Paris, accompanied by a band of young men as effeminate as himself, known as the Mignons, and surrounded by parrots, monkeys, and pet dogs, while the next day he and his companions would show themselves clad in a penitent's dress, wearing masks, and carrying in their hands scourges, with which they flagellated one another as they sang aloud penitential psalms.

The assassination of the Duke of Guise 1588 finally aroused the hatred of the nation. The doctors of the Sorbonne declared the people to be relieved of the duty of obedience to the king, and the Leaguers dissolved the parliament. H., who was now, for the first time, thrown on his own resources—his mother had just died—was distracted by the difficulties of his position; and in his perplexity at hearing that Guise's brother, the Duke of Mayenne, had been declared lieut.gen. of the kingdom, threw himself under the protection of Henry of Navarre. The newly reconciled kings advanced at the head of 40,000 Huguenots on Paris, which, though gallantly defended by Mayenne, would probably have had to capitulate, had not the current of events been suddenly checked through the agency of a fanatical young dominican-brother, named Jacques Clement, who on pretense of having important tidings to communicate to H., killed him by plunging a knife into his body. The murderer was slain on the spot by the royal guard, and his victim died the following day, after having declared his kinsman, Henry Bourbon, of Navarre, his successor.

HENRY IV. (surnamed 'The Great,' and 'The Good'), King of France and Navarre: 1553—1610, May 14 (reigned, France, 1589—1610); b. Bearn; third son of Antoine de Bourbon, and of Jeanne d'Albret, daughter and heiress of Henry, King of Navarre and Bearn. His father's death placed him under the sole control of his mother and grandfather, at whose court he was trained to the practice of knightly and athletic exercises, and inured to the active habits and rude fare common to the Bernais mountaineers. His mother, a zealous Calvinist, was careful to select learned men holding her own tenets for his instructors; and having discovered that a plot was brewing to remove him to Spain by force, to train him in the Rom. Cath. faith, she conducted him, 1569, to La Rochelle, and presented him to the assembled Huguenot army, with whom he participated in the battle of Jarnac. H. was now chosen chief of the Prot party, though, on account of his youth, the principal command was vested in Coligny (q. v.). Notwithstanding the defeats which the Huguenots had experienced in this campaign, the peace of St. Germain which followed was apparently most advantageous to their

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cause, and was speedily followed by a contract of marriage between H. and Margaret of Valois, the sister of Charles IX. After much opposition on the part both of Rom. Catholics and of Protestants, the marriage was celebrated with great pomp 1572, two months after the sudden death of the queen Jeanne, which was probably due to poison, and within less than a week of the massacre of St. Bartholomew. It had been originally intended that H. was to share the fate of his friends and co-religionists; but his life was spared on condition of his professing himself a Rom. Catholic. Three years H. remained at the French court virtually a prisoner; but at length, 1576, he contrived to elude the vigilance of the queen-mother, and escaped to the camp of the Huguenots in Alençon, where, having revoked his compulsory conversion, he resumed the command of the army, and, by his skill, gained several signal advantages, which constrained the king to consent to a peace highly favorable to the cause of the reformers. The death of the Duke of Anjou (late Alençon) gave H. the rank as first prince of the blood-royal, of presumptive heir to the crown, while the murder of Henry III., 1589, made him, in right of the Salic law, and as the nearest lineal male descendant of the royal house of France, rightful king of France. As a Protestant, under the ban of papal excommunication, he was obnoxious to the greater part of the nation; and finding that the Dukes of Lorraine and Savoy, and Philip II. of Spain, were prepared, each on his own account, to dispute his claims, he retired to the south until he could collect more troops and obtain reinforcements from England and Germany. His nearly hopeless cause, however, gradually gained strength through the weakness and internal dissensions of the Liguists, who, in their anxiety to circumvent the ambitious designs which Philip II. cherished in favor of his daughter (niece of Henry III.), notwithstanding her exclusion by the Salic law, proclaimed the aged Cardinal Bourbon king, with the Duke of Mayenne lieut.gen. of the kingdom, and thus still further complicated the interests of their party. In 1590, H. won a splendid victory over Mayenne at Ivry. In 1593, the assembly of the states-general, by rejecting the pretensions of Philip II., and insisting on the integrity of the Salic law, smoothed H.'s way to the succession, though it is probable that he would never have been generally acknowledged had he not, by the advice of his friend and minister De Rosny, afterwards Duke de Sully (q.v.), formally professed himself a member of the Church of Rome. The ceremony of his recantation of Protestantism, which was celebrated with great pomp at St. Denis 1593, July, filled the Rom. Catholics with joy, and was followed by the speedy surrender of the most important cities of the kingdom, including even Paris, which opened its gates to him 1594: the civil war was not, however, wholly put down till four years later. In the same year, 1598, peace was concluded between Spain and France by the treaty of Ver-vins, which restored to France many important places in Picardy, and was otherwise favorable to the French king;

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but important as was this event, it was preceded by a still more memorable act, for H. had signed an edict at Nantes, Apr. 15, by which he secured to Protestants perfect liberty of conscience and the administration of impartial justice. H. was now at liberty to direct his attention to the internal improvements of the kingdom, which had been thoroughly disorganized through long civil war. The narrow-minded policy that had been followed during the preceding reigns had left the provinces remote from the capital very much at the mercy of the civic governors and large landed proprietors, who, in the absence of a general administrative vigilance, arrogated almost sovereign power to themselves, raising taxes and exacting compulsory services. These abuses H. completely stopped, and by making canals and roads, and thus opening all parts of his kingdom to traffic and commerce, he established new sources of wealth and prosperity for all classes of his subjects. The mainspring of these improvements was, however, the reorganization of the finances under Sully, who, in the course of 10 years, reduced the national debt from 330 millions to 50 millions of livres, though arrears of taxes to the amount of 20 millions were remitted by the king during that period. 1610, May 14, the day after the coronation of his second wife, Mary de' Medici, and when about to set out to commence war in Germany, H. was assassinated by a fanatic named Ravallac. Nineteen previous attempts had been made on his life, most of which had been traced to the agency of the papal and imperial courts; hence the people, in their grief and consternation, laid Ravallac's crime to the charge of the same influences. The grief of the Parisians was well-nigh delirious, and in their fury they wreaked the most horrible vengeance on the murderer, who, however, had been a mere tool in the hands of the Jesuits, H.'s implacable foes, notwithstanding the many concessions which he had made to their order.

Time has strengthened the high estimate which the lower classes had formed of their favorite king, for, though his faults were numerous, they were surpassed by his great qualities. Inordinate love of women was his worst fault, and the cause of much evil in his own and succeeding reigns; for his prodigality and weak indulgence to his favorite mistresses, Gabrielle d'Estrées and Henrietta d'Entragues, and his affection for the natural children which they bore him, were a scandal to the nation and a source of impoverishing embarrassment to the government. As authorities in regard to Henry II., III., and IV., in addition to the general histories of France, the following works may be consulted: Anquetil, *Esprit de la Ligue*; Petitot's *Collection of Mémoires*; De la Saussaye, *Histoire de Blois*; *Documents de l'Hist. de France*; Matthieu, *Hist. de Henri IV.*; Memoirs and Letters of De Thou, D'Aubigné, Pasquier, Duplessis-Mornay; Capefigue, *Hist. de la Réforme et de la Ligue*; Péréfixe, *Hist. de Henri IV.*

HENRY III., Emperor of Germany: 1017-56 (Holy Roman Emperor 1039-56); of the Salvo-Franconian line, son and successor of Emperor Conrad II. He was elected king

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of the Germans, 1026, Duke of Bavaria, 1027, Duke of Swabia and Burgundy, 1037. H., whose good natural abilities had been cultivated as far as the age permitted, was one of the most energetic and efficient rulers of Germany. By his vigor he maintained his ascendancy notwithstanding the encroachments of the church and the subordination of the princes of the empire. Having summoned a council at Sutri, 1046, he availed himself of the influence which he had acquired in Italy, by his judicious reconciliation of antagonist parties, to secure the recognition of a new pope, Clement II., and thus brought to an end the scandalous dissensions which were disturbing Christendom, through the intrigues of three rival popes, Benedict IX., Sylvester III., and Gregory IV. By his energetic maintenance of the integrity of the empire, he gained opportunities of adding new territories to the imperial states; for having retaliated on the Duke of Bohemia for the hostilities which he had carried on against the Poles during the intestine disorders of Poland, his decisive successes compelled the Bohemian duke to acknowledge himself vassal of the empire; while H.'s campaign against Hungary had a similar result, terminating, 1047, in the recognition of the supreme power of the emperor over the kings of Hungary. He secured also powerful vassals in Italy, in the Norman conquerors of Apulia and Calabria. H. devoted his short intervals of peace to the eradication of numerous abuses in the church, but his schemes of ecclesiastical reform were secretly frustrated by Hildebrand, afterward Gregory VII. (q.v.); and on the sudden death of H., who is supposed to have been poisoned, the papal chair was found to have already entered on decisive measures for its emancipation from imperial influence. H. distinguished himself as a zealous promoter of learning and the arts, especially music. He also founded numerous monastic schools, over which he placed learned monks of Brittany, and built several churches, and the cathedrals of Worms, Mayence, and Spire, in the last of which he was interred.

HENRY IV., Emperor of Germany: 1050—1106, Aug. 7 (Holy Roman Emperor, 1084—1106); son and successor of Henry III. He was elected king of the Germans, 1054, during the lifetime of his father. As he was only five years old at the death of his father, the regency was, in accordance with the wishes of the latter, confided to the child's mother, Agnes of Poitiers. H.'s perpetual quarrels with the Saxon princes and peers occupied his best years, and were the principal cause of the subsequent troubles and mortifications which have given memorable interest to his history. Unhappily for him, he was induced, 1074, after having suffered defeat and various insults at the hands of his Saxon vassals, to appeal to the pope for his intervention, and Gregory VII., who was only too happy to have an opportunity of interfering in the matter, dispatched plenipotentiaries to settle the differences in Saxony, and availing himself of the occasion to prosecute his own plans, commanded the king to abstain from the sale and granting of benefices while this quarrel was pending. Before these

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directions reached Germany, H. had, however, settled his own affairs by defeating the Saxon insurgents in a great battle at Hohenburg, taken their princes captive, and rebuilt all the strongholds which they had dismantled; while his councilors had prosecuted a vigorous business in the interdicted sale of benefices. H. not only approved their conduct, but responded to the pope's remonstrances on the subject, and his summons for his appearance at Rome, by declaring, through an assembly of German bishops and abbots, at Worms, 1076, that the pontiff was deposed. Gregory VII. retaliated by excommunicating and deposing H., and absolving his subjects from all future obedience toward him. The king at first made light of the sentence, but when he found his vassals and princes gradually falling away from their allegiance, while the electors held a diet in which they declared that unless the ban were removed within a twelvemonth, they would deprive him of the crown, he submitted; and accompanied only by his faithful consort and their eldest son, he hastened, under grievous difficulties, in midwinter, to Italy, where he sought the pope. For three days, 1077, Jan., H., barefooted, and clothed only in the haircloth shirt of a penitent, was compelled to stand without the castle gates of Canossa, exposed to the inclemency of the weather, before the pontiff consented to remove the ban of excommunication. This incident marks the highest historic point of papal authority.

After this event, H.'s courage and resentment speedily revived; and having found adherents among the Lombards, he began a conflict against the papal power, chiefly in regard to the right of investiture, in which he was generally successful. Gregory again excommunicated H., who, as usual, retaliated by electing a new pope, Clement III. Hastening over the Alps, he laid siege to Rome and captured the city. Gregory took refuge in the castle of San Angelo, and H. caused himself to be crowned emperor by the anti-pope; but finding that Hermann of Luxemburg had, during his absence, been elected king of Germany, he hastily left Rome to regain his lost power. For the third time H. crossed the Alps, 1090, and he had already succeeded in raising the fortunes of his friend, Clement III., taken Mantua, and gained many victories over the Guelphic princes and their favorite pope, Urban II.. when he suddenly learned that his son Conrad had joined his enemies, and been crowned king at Monza. H.'s despair on hearing of these acts of rebellion nearly unsettled his reason, and having retired to one of his Lombard castles, he remained several years in seclusion; but at length rousing himself from his lethargy, he returned, 1096, to Germany, where the princes and people now vied with one another to show him their sympathy and good-will. By his own request, his second son, Henry, was elected king of the Germans, and his successor in the empire. This prince, however, having been induced by Pope Paschal II. to rise against his father, took him prisoner, and forcibly compelled him to abdicate. The emperor escaped from his

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prison, and found friends and safety at Liege, where he died while preparing another army to continue the struggle.

HENRY V., Emperor of Germany: 1081–1125 (Holy Roman Emperor 1110–25): son of Henry IV. His elder brother, Conrad, having been induced by the papal party to join the rebellion against his father, was declared at Mainz to have forfeited his rights to the throne by a diet, and H. was proclaimed the emperor's successor 1098. In 1104 H. also rebelled against his father, and the papal party treated him with extreme consideration, expecting to effect an easy reconciliation between the church and state on his accession. H. succeeded his father 1106, and when Pope Paschal II. demanded that he should surrender the right of investing the bishops with ring and staff (see INVESTITURE), he unexpectedly refused, and four years afterward invaded Italy at the head of a large army. The pope, alarmed at the display of force, withdrew his demand, and agreed to crown the emperor; but the Roman prelates rendered it impossible for the pope to do so, whereupon H. made the pope and all his cardinals prisoners. Paschal then recognized the emperor's right of investiture and gave him the imperial crown. H. had scarcely recrossed the Alps when Paschal denounced the treaty as having been obtained by force, reaffirmed his demands, and contrary to the treaty excommunicated H. During the next 5 years H. was wholly occupied with the rebellions of various north German and Saxon princes; but 1116 he led a second expedition against Rome, drove Paschal from the city, and on the death of that pope caused Gregory VIII. to be chosen his successor. In opposition, the extreme papal party chose Gelasius II. as pope, who at once renewed the sentence of excommunication against H. The emperor returned to Germany 1119, and the same year Gelasius died; and Calixtus II., his successor, offered H. the compromise which resulted in the concordat of Worms 1122, by which H. surrendered the right of investiture and received others from the papal party.

HENRY, Prince of Prussia: a German naval officer; brother of Emperor William; b. in Berlin, 1862, Aug. 14; entered the navy in 1877; was appointed to succeed Vice-Admiral von Diederichs in command of the German fleet in Chinese waters, 1899, March. Early in 1902, January, Emperor William requested President Roosevelt's permission for his daughter, Alice, to christen the new yacht of the Emperor, which was built in the United States. Prince Henry represented the Emperor on this occasion, and with the *Hohenzollern* arrived in N. Y., Feb. 23. He was given a State dinner by President Roosevelt on the 24; witnessed the launching of the yacht the following day; and after making a rapid tour of the country, sailed for home March 11.

HENRY, FORT: see DONELSON, FORT.

HENRY, JOSEPH, LL.D.: 1797, Dec. 17—1878, May 13; b. Albany, N. Y.: physicist. He received a common school and academical education; studied chemistry, anat-

omy, and physiology with the intention of becoming a physician; was appointed asst. engineer on the survey of a route for a state road from Lake Erie to the Hudson river 1825; and was elected prof. of mathematics and natural philosophy in Albany Acad. 1826. In 1827 he began a series of investigations in electricity and electro-magnetism which resulted in discoveries of the highest importance, and, among other universal benefits, rendered possible the electric telegraph. He first improved existing forms of apparatus; then produced the electro-magnet proper, using soft iron and increasing the amount of magnetism by enlarging the number of coils around the polar limbs; in 1829 exhibited electro-magnets of his own construction that possessed greater sustaining power than any before known; 1830 developed the intensity-magnet; 1831 suggested the application of this magnet to telegraphic uses, and constructed and operated a line of insulated wire more than a mile long in the Albany Acad.; the same year made an electro-magnet for Yale College which sustained a weight exceeding a ton, and one for the College of New Jersey that carried 3,600 pounds, and completed the first electro-magnetic engine; and 1832 discovered the production of secondary currents in a long conductor by the induction of the primary current upon itself, and obtained an electric spark by simple magnetic induction. During 1827-32 he co-operated with Dr. Beck in formulating a system of meteorological observations for the state of N. Y. In 1832 he was elected prof. of natural philosophy in the College of New Jersey, and the duties of the office, combined with lecturing on chemistry, mineralogy, geology, astronomy, and architecture, caused an interruption in his electrical studies. In 1835 he demonstrated the possibilities of an electro-magnetic telegraph by means of a series of insulated wires extended over the college green. He remained at Princeton till 1846, when he was elected the first sec. of the Smithsonian Institution; and in spite of tempting calls elsewhere—including two to the presidency of the College of New Jersey—he occupied that office till his death. He was a member of the U. S. lighthouse board from its organization 1852, and its chairman 1871-78, pres. of the American Assoc. for the Advancement of Science 1849, a founder of the National Acad. of Science, and its pres. 1868; and member of numerous societies in the United States and Europe. He received the degree LL.D. from Union College 1829 and Harvard College 1851. A memorial of him was published by order of congress 1880.

HENRY, MATTHEW: eminent Nonconformist minister: 1662, Oct. 18—1714, June 22; b. Broad Oak Farmhouse, Flintshire, England; second son of Philip H., who was one of the 2,000 ministers who left the Church of England on the passing of the 'Act of Uniformity.' Having qualified himself for the ministry, he began to preach 1686, June, and 1687 was settled as pastor of a Presb. congregation at Chester, where he continued 25 years. 1712, May, he removed to a charge at Hackney, near London, having

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refused two previous invitations from the same congregation. He died of apoplexy, on his return from a visit to his old friends at Chester. He was twice married, and had a large family by his second wife. His principal work is an *Exposition of the Old and New Testament*, 5 vols. folio, 1710, begun 1704, Nov.; often reprinted. He lived to finish only the Acts of the Apostles. The remainder was completed by various ministers, whose names are given in some of the editions. His first publication, *A Discourse concerning the Nature of Schism*, 34 pages duodecimo, appeared anonymously 1689. He was author of a biographical sketch of his father, 1696; *A Scripture Catechism*, 1702, 8vo; *Communicant's Companion*, 1704, 8vo; *Discourses against Vice and Immorality*, 1705; *A Method of Prayer*, 1710, 8vo; *Family Hymns*; numerous sermons; and some religious tracts. His miscellaneous works were republished, London, 1830, 8vo. His chief work was the *Exposition, etc.*, of little value critically, but of singular value and helpfulness for its discriminating thought, its high evangelical and devotional tone, its thoroughly practical bearing, its often startling richness and pertinence of suggestion, all set forth with a rare felicity and raciness of style. In these qualities it still holds the foremost place among biblical commentaries.

HENRY, PATRICK: 1736, May 29—1799, June, 6; b. Studley, Hanover co., Va.: statesman. He was a son of Col. John H., native of Aberdeen, Scotland, school-teacher and magistrate, and was educated chiefly by his father. His youth was unpromising. He had no taste for book-learning, and with difficulty acquired a fair knowledge of the common English branches and a little Latin. He was enthusiastic only in the sports of the forest and stream. At 18 he married, and in the next six years engaged unsuccessfully in farming, and twice failed in mercantile business. In 1760 he determined to become a lawyer, and after six weeks' hard study was licensed to practice on the condition that he should continue his legal studies for a specified period. He suddenly overcame his habitual indolence, and developing a passion for history applied himself closely to that of Greece and Rome, finding a keen delight in Livy. The first three years of his legal career were passed in comparative poverty and study with naught to encourage his ambition. Suddenly, 1763, Dec., he was engaged by the co. collector, after an experienced lawyer had declined, to defend a suit brought by a minister of the Established Church to recover his salary in tobacco. By virtue of an old statute each minister was entitled to 16,000 pounds of tobacco per annum as salary. An advance in the market price of the staple caused by a short crop, had induced the colonial legislature to commute the ministers' salaries into money at a former rate per pound. The 'parsons' cause' was a protest against this action, and one of the ministers brought suit against the co. collector as a test case. H. undertook the defense, and in arguing the people's cause, in the court over which his father presided as judge, astonished all within range

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of his voice by his remarkable oratorical powers and advanced patriotism. His first plea in court resulted in a verdict for the people, gave him wide renown, and brought him business and political honors. Early in 1765, May, the passage of the stamp-act by the British parliament was proclaimed in Va. A few days afterward a member of the house of burgesses resigned his seat and H. was elected to fill his vacancy. He took his seat on the 20th and on the 29th—his 29th birthday—introduced his famous resolutions asserting the rights of the colony and declaring the stamp-act unconstitutional and subversive of American liberty. His resolutions encountered extreme opposition, but he supported them in a thrilling, defiant speech, and carried five of them, the last—reciting that ‘the General Assembly of this colony have the sole right and power to lay taxes and impositions upon the inhabitants of this Colony’—having a majority of one vote. It was during this speech that he made the memorable exclamation: ‘Cæsar had his Brutus, Charles I. his Cromwell, and George III.’—here he was interrupted by cries of ‘Treason!’ from all parts of the house—‘may profit by their example. If this be treason make the most of it.’ The publication of his resolutions and speech led to open resistance to the stamp-act elsewhere, and attracted still wider attention to the bold young orator. He was at once recognized as leader by the early patriots of the colony, and his advice was sought by anxious men in other parts. In 1769 he was admitted to practice in the gen. court of Va., and though his legal knowledge was very limited his power as a pleader made him remarkably successful and brought him a large income. In 1773 he aided materially in securing the passage by the house of burgesses of a resolution which led to the establishment of corresponding committees among the colonies; 1774 led the movement to organize a congress of the colonies; 1774 was the first speaker of the first continental congress, and successfully opposed a scheme of reconciliation with England; and 1775, Mar., moved in the Va. convention that the colony be at once put in a state of defense preparatory to war, and supported the motion with a speech ending, ‘I know not what course others may take, but, as for me, give me liberty or give me death!’ His prophecy that ‘the next gale that sweeps from the north will bring the clash of resounding arms’ was realized within a few days in the reports of the conflicts at Lexington and Concord. Lord Dunmore, the royal gov. of Va., fearing an immediate outbreak, removed all the gunpowder in the colony to a British ship. H. raised a force of 700 militia, marched upon the royal quarters at Williamsburg, and by threats of arrest compelled Dunmore to pay for the powder. A convention, hastily assembled at Richmond, appointed a committee of public safety, authorized the enlistment of two regiments of militia, and commissioned H. col. and commander of all the Va. forces. Soon afterward congress appointed a subordinate brig.gen., and tendered H. a commission as col., which he declined to accept and retired

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from the army. He was elected a member of the Va. convention which assembled 1776, May; and in that body secured the passage of resolutions directing the Va. delegates in congress to work for independence, and providing that the colony should take immediate steps to constitute itself an independent state. On the adoption of its constitution he was elected gov., and served 1776-79, 1781-86. He declined appointment as delegate to the convention that framed the federal constitution 1787, and in the state convention 1788 opposed its ratification as inconsistent with the doctrine of state sovereignty. He retired to private life 1794, and subsequently declined the offices of U. S. sec. of state, chief justice of the U. S. supreme court, U. S. minister to France, and gov. of Va. At the request of Washington he was a successful candidate for the Va. senate, and prepared to oppose the resolution claiming the right of a state to resist the execution of an obnoxious act of congress, but died before taking his seat.

HENRY, ROBERT, D.D.: 1718, Feb. 18—1790; b. St. Ninians, Stirlingshire: Scotch clergyman and historian. He studied at the Univ. of Edinburgh; and from 1768 till his death was one of the ministers of the Established Church in that city. His *History of Great Britain on a New Plan* (vol. I. pub. 1771; vol. VI. 1793)—embracing the social aspects of successive periods, thus tracing the progress of civilization in Great Britain—was an improvement on anything that had been done before; but lacks accuracy, and consequently is of little value.

HENRY, THE DEACON, or HENRY OF CLUNY, or OF LAUSANNE: see HENRICIANS.

HENRY, THE LION, Duke of Saxony: most notable German prince of the 12th c.; 1129-95; son of Henry the Proud. When only ten years of age, he lost his father by poison, and for the next seven years, his mother, Gertrude, and his grandmother, Richenza, ruled his paternal dominions, while his uncle, Welf (Guelf), administered the hereditary fiefs of Bavaria. In 1146, H. took the reins of government, and at the diet of Frankfurt, in the following year, he demanded of Emperor Conrad the restoration of the whole duchy of Bavaria, which had been wrested from his father. This was refused; and Henry at once, in concert with his uncle, had recourse to arms; but his efforts were crushed by the energetic measures of Conrad. After the death of this emperor, however, Bavaria was given up to him by his cousin, Emperor Frederick I. His possessions now extended from the North Sea and the Baltic to the shores of the Adriatic. Eastphalia and Westphalia, with Engern, and the old duchy of Saxony from the Rhine to the Elbe, acknowledged his authority. The greater part of Bavaria belonged to him as a hereditary fief, while his Italian vassals in the Guelfic dominions beyond the Alps took the oath of allegiance to him 1157. In 1166, under the direction of Hartwig, Abp. of Bremen, a league, comprising the bishops of Magdeburg, Halberstadt, and Hildesheim, and the markgrafs of Thuringia and

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Brandenburg, was formed against him; but the capture of Bremen, and the storming of Oldenburg by H., paralyzed its designs. About this time he separated from his first wife, and married Matilda, daughter of Henry II. of England, soon after which event he undertook an expedition to Palestine. During his absence, his enemies were not idle, and even Emperor Frederick showed a decided lack of good faith, which H., some time after his return, showed he had not forgotten, by quitting the imperial army during an Italian campaign, and thereby causing Frederick to loose the battle of Legnano, and forcing him to conclude a disadvantageous treaty. The emperor was indignant, and at the diet of Spires, 1178, spoke strongly against the duke. The numerous enemies of the latter again combined against him; he was summoned to appear at three different diets, and refusing, was put under the ban of the empire. By 1182 his fortunes were at so low an ebb, that he was forced to ask mercy of the emperor at Erfurt; but all that he could get was permission to retain his hereditary territories of Brunswick and Luneburg, and even this was on the condition of his going into exile for three years. H., in consequence, betook himself with his family to England, but returned to Brunswick 1184, where he lived quietly. On the departure of Frederick to Palestine 1188, H. was again compelled to withdraw to England, but returned 1189, and after a year's fighting, a peace was concluded between him and his enemies, by which a portion of his former territories was restored to him. He died at Brunswick. H. was a brave and generous prince, of indefatigable activity, but obstinate and passionate. He was superior to the princes of his time in his efforts to advance the commerce, industry, and comfort of his people, and to foster literature and science. Compare Böttiger's *Heinrich der Löwe Herzog der Sachsen und Baiern* (Hannov. 1819).

HENRY, THE NAVIGATOR, Portuguese prince: 1394-1463; b. Oporto; fourth son of John I., King of Portugal. He distinguished himself first at the conquest of Ceuta 1415. After the death of his father, he took up his residence at Sagres, in Algarve, not far from Cape St. Vincent; and while prosecuting the war against the Moors of Africa, his sailors reached parts of the ocean which the navigators of the time had long supposed inaccessible. The grand ambition of H. was the discovery of unknown regions of the world. At Sagres he erected an observatory, to which he attached a school for the instruction of youthful scions of the nobility in the sciences necessary to navigation. Subsequently, he despatched some of his pupils on voyages of discovery, which resulted at last in the discovery of the Madeira Islands 1418. H.'s thoughts were now directed toward the auriferous coasts of Guinea, of which he had heard from the Moors; and 1433, one of his mariners sailed round Cape Nun, until then regarded as the furthest point of the earth, and took possession of the coasts as far south as Cape Bojador. Next year, H. sent out a larger ship, which reached a point 120 m. beyond Cape Bojador; and

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at last, 1440, Cape Blanco was reached. H. had borne all the expense of these voyages himself; at this time self-supporting societies were formed under his guidance, and what had formerly been the affair of a single individual, now became the passion of a whole nation. But H. did not slack personally in his efforts. In 1446, his captain, Nuno Tristan, doubled Cape Verd in Senegambia, and 1448, Gonzalez Vallo discovered three of the Azores. H., before he died had the satisfaction of learning that his mariners had reached as far s. as Sierra Leone. See Wappäus, *Untersuchungen über die Geogr. Entdeckungen der Portugiesen unter H., dem Seefahrer* (Gött. 1842). See also Barros and Candido Lusitano; Major's *Life of Prince Henry of Portugal* (Lond. 1868); and the same author's *Discoveries of Prince Henry the Navigator* (1877).

HENRY, WILLIAM, F.R.S.: 1775. Dec. 12—1836, Sep. 2; b. Manchester, England: eminent chemist. After studying medicine in the Manchester Infirmary, H. attended the lectures of Black, Gregory, etc., in Edinburgh, 1795-6. For several years he superintended a chemical business, established by his father. He returned to Edinburgh 1805, received the degree doctor of medicine from that univ. 1807, and applied himself to the allied subjects of chemistry and medicine. He was the author of nine papers in the *Philosophical Transactions* (chiefly on the chemistry of the gases); and his *Elements of Experimental Chemistry*, 2 vols. 1799, reached an 11th ed. 1829, an almost unparalleled success for a purely scientific work. H., like Dr. Wollaston, made the results of science, obtained by original and difficult researches, the foundation of a splendid fortune, and few persons have contributed more effectually by the application of their discoveries to the promotion of the arts and manufactures. The Memoirs of the Manchester Soc. are indebted chiefly to him and to Dalton for their high scientific character.

HENRYSON, hĕn'vĩ-son, ROBERT: 1425-1506; b. Scotland: poet. Nothing is definitely known of his birth, parentage, education, or death, and but little of his career. By some he is supposed to have been an ancestor of the family of H. or Henderson of Fordell, by others a schoolmaster at Dunfermline, an ecclesiastic, a Benedictine monk, a lawyer, and a notary public. In 1462 his name appeared on the list of members of the newly established Univ. of Glasgow. His writings include a metrical version of 13 of *Æsop's Fables*; the *Testament of Cresseid*, a continuation of Chaucer's *Troilus and Cresseide*; *Robene and Makyne*, considered the first specimen of the pastoral poetry of Scotland; *Bludy Serk*, a ballad; and the *Tale of Orpheus*. The mss. of several of his poems are preserved in the libraries of Edinburgh and London, and a collected edition of his works was published at Edinburgh 1865.

HENSCHEL, hĕn'shĕl, GEORGE: baritone singer: b. Breslau, Prussia, 1850. He made his first appearance as a pianist when 12 years old, studied singing with Moscheles in the Leipsic Conservatory and afterward in Berlin, took

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a course in composition with Kiel, and finished his vocal education with Adolphe Schulze. He made his first appearance as a singer and composer, London 1878, and has since achieved an European and American reputation. H. married a Boston lady and with her gave a series of concerts in the United States 1888-9.

HENSLER, ELISE, or ELIZA (Countess D'Edla): see FERDINAND, AUGUSTUS FRANCIS ANTHONY.

HENSON, *hěn'son* JOSIAH: 1787, June 15—1881; b. Port Tobacco, Charles co., Md.: original of Harriet Beecher Stowe's 'Uncle Tom.' He was born and bred a slave, brutally treated by his overseer, sent to Ky. with all his master's slaves to escape seizure by creditors, hired out to a planter named St. Clair, whose little daughter was very kind to him; and after making a payment toward his freedom was taken by his master's son to New Orleans to be sold. With his wife and two children he escaped to Canada, settled on the site of Dresden, Ontario, became a prosperous farmer, learned to read and write when 55 years old, made lecturing tours of England, 1850, 52, and '76, was received by Queen Victoria; and was pastor of a church at Dresden many years. His relation of the incidents of his life to Mrs. Stowe formed the basis of her famous novel, *Uncle Tom's Cabin*.

HENT, v.: another spelling of HEND, which see.

HEN'WARE: see BADDERLOCKS.

HEP: another spelling of HIP 2, which see.

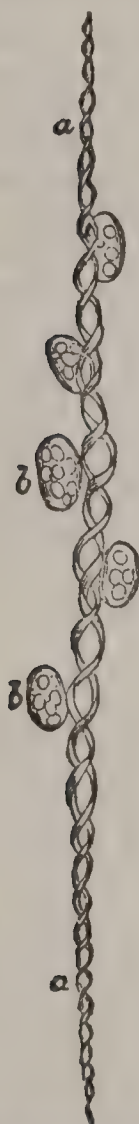
HEPAR, n. *hē'pār* [Gr. *hepar*, the liver]: various combinations of sulphur with an alkaline metal; so named by the older chemists from their brown, liver-like color: of these, *Hepar sulphuris*, mixture of tersulphide of potassium and some oxysalts of potash, is the best known.

HEPATIC, a *hē-pāt'ik*, or HEPAT'ICAL, a. *-ī-kāl* [Gr. *hepātīkōs*, affecting the liver—from *hepar*, the liver]: belonging to the liver—applied to a duct conveying the bile from the liver; having a liver-like color and consistency; applied to springs containing sulphuretted hydrogen in solution. HEPATICA, term in *materia medica* for medicines which affect the liver and its appendages. The hepatica may be employed (1) to modify the secretion of bile; (2) to remove pain of the liver or gall bladder, or pain and spasm of the gall-ducts; (3) to relieve enlargements and other affections of the liver. HEPATITE, n. *hē'pā-tīt*, a dark-gray variety of heavy-spar which, when rubbed or heated, emits a fetid odor like sulphuretted hydrogen. HE'PATI'TIS, n. *-tī'tīs*, inflammation of the liver; a rare disease in temperate latitudes, but in tropical climates often so acute and so rapidly fatal as to admit little medical treatment. It is indicated by pain in the right side and shoulder, tenderness on pressure in the right hypochondrium (see ABDOMEN), with enlargement of the liver as detected by the hand and by percussion, often vomiting, always fever. with more or less loss of appetite and a foul tongue. Frequently there is Jaundice (q.v.). The disease sometimes ends in abscesses,

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which may require to be opened externally. The treatment is complicated, and requires professional care. For other diseases of the liver, see LIVER, DISEASES OF. HEPATIZATION, n. *hē'pāt-ī-zā'shùn*, a diseased part of the body, especially of the lungs, having the appearance of liver. HEPATIC AIR, sulphuretted hydrogen gas.

HEPATICÆ, *hē'pāt'ī-sē*, or LIVERWORTS, *līv'ēr-wérts*:



natural order of cryptogamous plants, included among mosses by the older botanists. They have generally a leafy stem; more rarely they are expanded into a leaf-like form. The reproductive organs are of two kinds, *antheridia* and *pistillidia*, as in mosses; the spore-cases (capsules, matured pistillidia) have no operculum; open when ripe by 4-8 valves, more rarely by teeth; and generally contain with the spores, spiral filaments called *elaters*. Each elater consists of two spiral fibres, which, while the spore-case is unbroken, remain coiled up together within an oval cell; but when, by the breaking of the mature spore-case, the outer pressure is removed, their elasticity bursts their cells, and as they suddenly extend themselves, they aid in the dispersion of the spores. The H. are found in situations generally similar to those of mosses; and are widely distributed over the globe; but the greater number belong to warm climates, where they often grow on the bark, and even on the leaves of trees. Some botanists divide H. into three orders *Jangermaniaceæ*, *Marchantiaceæ*, and *Ricciaceæ*.

HEPATO, *hē'pā-tō* [Gr. *hepar*, the liver, *hepatōs*, of the liver]: a prefix signifying 'connected with or related to the liver.' HE'PATO-GAS'TRIC, a. -*gās'trīk* [Gr. *gaster*, the stomach]: belonging to the liver and stomach.

Elater and Spores of
Marchantia:

a, elater; b, spores.

HEPBURN, *hēp'bérn*, JAMES CURTIS, M.D.: missionary: b. Milton, Penn., 1815. He graduated at the college of N. J. 1833, and the medical dept. of the Univ. of Penn. 1836; practiced about two years in Norristown, Penn.; went to China as a medical missionary 1838; spent a year in Singapore and 5 in Amoy; practiced in New York 1845-59; and went to Japan as a missionary in the latter year. Beside conducting a dispensary at Kanagawa, he has since been engaged in translating the Bible into Japanese and preparing text-books of the language. His chief work is a *Japanese English and English-Japanese Dictionary*, in Roman, Chinese, and Japanese type (1867, 3d ed. 1886.)

HEPHÆSTION—HEPTARCHY.

HEPHÆSTION, *hē-fēs'tī-on*: about B.C. 357-325; b. Pella, Macedonia: companion of Alexander the Great. The singular friendship between H. and the prince sprang up when both were children and continued as an intimacy without interruption till the death of H. H. accompanied Alexander to Troy, was honored with important commands in the campaigns in Bactria and India, and was rewarded by the conqueror with a golden crown and the hand of Drypetis, daughter of Darius and sister of Alexander's wife. He died suddenly in Ecbatana, and Alexander was so overwhelmed with the news of the event that he ordered the physician who had attended H. put to death, had the sacred fire extinguished—which was done only at the death of a Persian monarch—intrusted the body of his favorite to Perdikkas, ordered a general mourning throughout Asia, honored the remains with a most magnificent funeral in Babylon, and had temples erected to H. as a public hero.

HEPHÆS'TUS: see **VULCAN**.

HEPTA, *hēp'tà* [Gr. *hepta*]: a prefix signifying seven.

HEPTACHORD, n. *hēp'tă-kawrd* [Gr. *hepta*, seven; *chōrdē*, a chord]: an anc. musical instrument of seven strings; a poetical composition played or sung on seven different notes.

HEPTAGON, n. *hēp'tă-gŏn* [Gr. *hepta*, seven; *gōnĭă*, an angle]: plane figure of *seven* sides and *seven* angles; when the sides and angles are equal, the figure is a *regular heptagon*. Geometers have hitherto failed to discover a method of inscribing the heptagon in, or of circumscribing it about a circle, and the problem is believed by many to be, like 'the trisection of an angle,' impossible of solution by the ancient geometry. **HEPTAG'ONAL**, a. *-ŏ-năl*, having seven sides and angles.

HEPTAGYNOUS, a. *hēp-tăj'ĭ-nŭs* [Gr. *hepta*, seven; *gŭnē*, a female]: in *bot.*, having seven styles.

HEPTAHEDRON, n. *hēp'tă-hē'drŏn* [Gr. *hepta*, seven; *hēdră*, a seat]: a solid figure having seven bases or sides.

HEPTANDRIAN, a. *hēp-tăn'drĭ-ăn* [Gr. *hepta*, seven; *aner*, or *andra*, a man]: in *bot.*, having seven stamens, as in the **HEPTAN'DRIA**, n. *-drĭ-ă*; also **HEPTAN'DROUS**, a. *-drŭs*.

HEPTANGULAR, a. *hēp-tăng'gŭ-lēr* [Gr. *hepta*, seven; L. *angŭlŭs*, a corner]: having seven angles.

HEPTANOMIS: Greek name for the interior of ancient Egypt, 30°—27° n., comprising the great cities and monuments.

HEPTARCHY, n. *hēp'tăr-kĭ* [Gr. *hepta*, seven; *archē*, rule]: a government by seven persons; the country so governed; England, when divided into seven kingdoms (see **HEPTARCHY**, **THE**). **HEPTARCHIC**, a. *hēp-tăr'kĭk*, denoting a sevenfold government. **HEP'TARCHIST**, n. *-kĭst*, one who rules in a heptarchy.

HEPTARCHY, *hēp'tăr'kĭ*, **THE**: seven kingdoms said to have been established by the Saxons in England: see

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ANGLO-SAXONS. The common idea is, that these seven kingdoms were contemporaneous; but all that can be safely asserted is, that England, in the time of the Saxons, was peopled by various tribes, of which the leading occupation was war; and that sometimes one was conquered, sometimes another. At no time was there a counterpoise of power among seven of them, so that they could be said to have a separate, much less an independent existence. Still, seven names do survive (some authorities adding an eighth). The king of the one that had the fortune to be most powerful for the time being, was styled Bretwalda or ruler of Britain, but in most instances the power of this supposed ruler beyond the limits of his own territory must have been very small. Under Egbert, Wessex rose to be supreme, and virtually swallowed up the others. The following is a brief account of the seven kingdoms commonly said to have formed the Heptarchy:

1. Kent, after the battle of Creccanford, in which 4,000 Britons were slain, was abandoned by the Britons, and became the kingdom of their conquerors, a band of Jutes, who had come A.D. 446 to serve Vortigern, King of the Picts, as mercenaries, under the leadership of Hengist and Horsa, who were little other than pirates. Hengist became king of Kent, and his son Eric or Aesc succeeded him, and from him his descendants, the kings of Kent, were called Aescingas. In 796, Kent was conquered by Cenwulf, King of Mercia; and about 823 both were conquered by Egbert, King of Wessex, who appointed his son Ethelwulf king of Kent, which hereafter, though separate in name, was really subordinate to Wessex.

2. Sussex, partially conquered about 477, and wholly, before 491, by Ella the Saxon, who was the first bretwalda of Britain. Sussex submitted to Egbert of Wessex 828, and his son Athelstane governed it under him.

3. Wessex, though fluctuating in extent, as were all the kingdoms, included Surrey, Hants, the Isle of Wight, Berks, Wilts, Dorset, Somerset, Devon, and part of Cornwall. It was founded about 494 by Cerdic and Cynric his son, 'Ealdormen' or leaders of the 'old Saxons.' King Egbert, who returned from a flight to Gaul 800, and ruled from that year till his death 836, was, as a conqueror, the most successful of all these Saxon kings. When he died, his dominions were divided between his sons, Ethelwulf and Athelstane, the former taking Wessex Proper, and the latter Kent, Essex, Sussex, and Surrey. Another Athelstane, who succeeded 925 to Mercia and Wessex, conquered Exeter, and assumed Northumbria, exacted tribute from the Welsh, and some formal submission from the Britons of the west, as well as the Danes and Scots. He appears occasionally to have held witenagemôtes or Saxon parliaments of subordinate chiefs (*subreguli*), and at one of these, Constantine, King of Scotland, appeared as a *subregulus*. But Athelstane and his successors, as well as his predecessor, Alfred the Great, belong to the history of England, as indeed do all the Saxon states and kings after Egbert.

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4. Essex, which comprised also Middlesex, if ever independent, was so about 530; but early in the 7th c. it became subject to Mercia, and fell with it to Wessex 823. This state and Sussex and Wessex were founded by the old Saxons; the remaining three by the Angles who came from Holstein and gave their name to England.

5. Northumbria consisted of Bernicia and Deira, which were at first separate and independent states. The former comprised Northumberland and all Scotland south of the Forth, and was founded by Ida about 560. The latter comprised Cumberland, Durham, York, and Lancaster, and was founded by Ella the Angle about the same date. These two were united about 655, and, as Northumbria, they submitted to Egbert 829.

6. East Anglia, comprising Norfolk, Suffolk, and Cambridge, was founded about 571 by Uffa, and from him its kings were named Uffingas. In 883, it was conquered by the Danes, and was restored to Saxon rule by Athelstane 925.

7. Mercia included the counties in the centre of the kingdom, and is said to have been founded by Crida or Creoda 585. Three-quarters of a century later, it was conquered for a time by Northumbria, but it recovered its independence, and retained it until Egbert subdued it. Canute the Dane had it and Northumbria ceded to him 1016, just before Edmund Ironside's death allowed him to become king of England, and the Danes to obtain the ascendancy over the Saxons, for which they had been striving, at intervals, for five generations. Compare Palgrave's *Rise and Progress of the English Commonwealth* (2 vols. Lond. 1832).

HEPTATEUCH, n. *hěp'ta-tūk* [Gr. *hepta*, seven *teuchos*, a book]: the first seven books of the Old Testament.

HEPWORTH, *hěp'worth*, GEORGE HUGHES, D.D.: Congl. minister and an editor: b. Boston, 1833, Feb. 4. He graduated at the Cambridge Divinity School 1855, was pastor of a Unit. church in Nantucket 1855-57 and of the Church of the Unity in Boston 1858-70, chaplain of the 47th Mass. vols. in La. 1862, on Gen. Banks's staff 1863, pastor of the (Unit.) Church of the Messiah in New York 1870-72; became a Trinitarian, organized the Church of the Disciples in New York, and was its pastor 1872-79, made a foreign tour, was pastor of the Belleville Ave. Congl. Church in Newark, N. J., 1882-85, and an editor of the N. Y. *Herald*. He was author of *Whip, Sword and Hoe*, (1864), *The Little Gentlemen in Green* (1865), *Rocks and Shoals* (1870), *Lectures to Young Men* (1870), *Christ and His Church* (1872), *Starboard and Port* (1876), and *!!!* (1885). He died 1902, June 7.

HER, pron. *hēr* [AS. *heo*, she; *hi*, her; *hyre*, of or to her]: the objective case sing. of the fem. pers. pron. *she*. HERS, *hěrz*, the poss. form. HERSELF, compound pers. pron.

HE'RA: see JUNO.

HERACLE'A, or HERACLEIA: ancient city in Bythinia, on the s. coast of the Black Sea: see EREGLI.

HERACLEA—HERACLITUS.

HERACLEA, *hěr-a-klē'á*, or **HERACLEIA**, *hěr-a-klī'á*: ancient city of Magna Græcia, on the right bank of the Aciris (modern Agri), about three m. above the mouth of that river in the Gulf of Tarentum. It was founded about B.C. 432, and, though under the Romans it became a prosperous, important, and refined city, it never acquired historical prominence. When it fell into decay, is not known, but at the present day little remains to mark its site except heaps of rubbish. In the neighborhood, besides a large number of coins, ranking among the very finest relics of antiquity, there have been discovered certain bronze tables, known as the *Tabule Heracleenses*, containing a copy of the *Lex Julia Municipalis* (B.C. 45), and forming one of the principal authorities for a knowledge of the municipal law of ancient Italy. This inscription has been published by Muratori, Savigny, and others.

HERACLEA, *hěr-a-klē'á*, or **HERACLEIA**, *hěr-a-klī'á*: city on the s.w. coast of Sicily, at the mouth of the Halycus river; distinguished from other ancient cities of the same name by the surname of Minoa, in honor of Minos, its supposed founder. It was subdued by Euryleon, grew in importance till destroyed by the Carthaginians, was taken by Pyrrhus and Hanno, was the scene of the defeat of the Carthaginian fleet by Regulus and Manlius, and, after being occupied by the Romans and Carthaginians alternately, resisted Marcellus a considerable time after the fall of Syracuse.

HERACLEIDÆ, *hěr-a-klī'dē*: in the widest sense, all 'the descendants of Heracles' (Hercules), of whatever time, and in whatever district of Greece; but specially those adventurers who, founding their claims on their supposed descent from the great hero (to whom Zeus had promised a portion of the land), joined the Dorians in the conquest of the Peloponnesus. There were five different expeditions, the last and greatest occurring 80 years after the Trojan war. The leaders of this last were Temenus, Cresphontes, and Aristodemus, sons of Aristomachus. They defeated Tisamenus, son of Orestes and grandson of Agamemnon, and thus gained possession of Argos, Sparta, and Mycenæ. The other parts of the country quickly submitted to them, and they then proceeded to divide the spoil. Argos fell to Temenus; Lacedæmon to Procles and Eurystheus, sons of Aristodemus; and Messenia to Cresphontes. This story of the return of the Heraclidæ touches on the historical period, and, though there is much of fable and tradition, yet there seems also a large substratum of truth in the records.—See Müller's *Dorians*; Thirlwall's and Grote's *Greece*.

HERACLEON, *hē-rāk'lē-on*: Gnostic philosopher: abt. A.D. 125; in s. Italy or in Sicily. The early writers mostly assign him to the Valentinian group of heretics, though he had some views peculiar to himself: see **VALENTINIANS**.

HER'ACLES: see **HERCULES**.

HERACLITUS, *hěr-a-klī'tūs* (or **HERACLEITUS**), of **EPHESUS**: Greek philosopher: abt. B.C. 535—B.C. 475; b. Ephesus, in Asia Minor, of a prominent family. He is said

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to have travelled much, and to have been very sorrowfully impressed with the weakness of his fellow-creatures, whence, according to old traditions, he obtained the nickname of the 'weeping philosopher,' in contrast to Democritus, 'the laughing philosopher.' The result of H.'s researches and meditations was a work on the nature of things, said to have been entitled *Peri Physeōs* (On Nature). Such fragments of it as remain were collected and elucidated by Schleiermacher in Wolf and Buttmann's *Museum der Alterthumswissenschaften*. After being long regarded as superficial and incoherent in his thinking, H. has by some recent writers been ranked as one of the most original and profound philosophers of ancient Greece. He denies the reality of Being, and sets forth as the only actuality, Becoming, or eternal flux and change. Thus, he naturally selects fire—a sort of symbol and presentation of the process of becoming—as the principle of all existences, even of the soul itself; and the 'primordial fire' he recognizes as the original 'divine rational process,' whose harmony is the Universal Reason. It remains doubtful whether H. thus adds much to our knowledge of Nature in its origin and its process. The best exposition of his system (though too Hegelian) is by Lassalle (Berlin 1858).

HERACLIUS, *hēr-a-klī'ūs*: Byzantine emperor: abt. 575—641 (reigned 610—641); b. in Cappadocia; descended from a line of brave ancestors. His father, also named H., was exarch or gov.gen. of Africa. Regarding H.'s youth, we know almost nothing; but when past 30 years of age, he took part in the conspiracy (which proved successful) against the emperor Phocas, whose horrible cruelties had made him universally detested. In 610, H., at the head of a fleet, appeared at Constantinople: the citizens rose in rebellion, Phocas was beheaded, and H., having 'usurped the usurper's throne,' was saluted emperor in his stead. His fellow conspirators were richly rewarded. The condition of the Byzantine empire at this time was deplorable. Factions within and the barbarians without had reduced it almost to ruin, so that years elapsed before H.—a man of splendid but fitful genius—could put forth any vigorous efforts for its reorganization. His most powerful enemies in the north were the Avari, who, 619, plundered the country to the very gates of Constantinople, nearly captured H. himself, and are said to have carried with them to their homes beyond the Danube 250,000 prisoners. The whole western empire had by this time been seized by the Slaves, Lombards, Visigoths, and other tribes; but by far the most alarming conquests were those made in the East by the Persian king Chosroēs II. In 615, Sarbar, the Persian general, stormed and plundered Jerusalem. The same fate befell Alexandria in the following year, after which all Egypt yielded to the victorious Sarbar, who penetrated as far as Abyssinia. By stopping the export of corn from Egypt to Constantinople, he likewise caused a severe famine in the latter city. In the same year (616), the Persians besieged and captured Chalcedon, opposite Constantinople. H. at first tried to negotiate with his enemies,

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but, flushed with their triumphs, they refused, and even put his ambassadors to death. Probably the emperor, who was now laying his plans for taking a magnificent revenge on the Persians, was not greatly displeased at their refusal. Having, after a whole year of laborious discipline, organized an army composed of Greeks and barbarians, he, 622, shipped his troops at the Bosphorus, and sailed for Cilicia. Having landed, he encamped in the plain of Issus, completely routed a Persian army despatched against him, and forced his way, through the passes of the Taurus and Anti-Taurus, into the province of Pontus, where his soldiers wintered. In 624, he crossed Armenia, conquered several of the Perso-Caucasian countries, and reached the Caspian Sea. Here he formed an alliance with the khan of the Khazars, who ruled over the sterile regions n. of the Caucasus, as far as the river Ural. By the assistance of these and other barbarians, he attacked Media, and carried his arms as far s. as Ispahan. Before going into winter quarters, he again utterly defeated the main body of the Persians, commanded by Chosroës himself. In 625, H. descended from the Caucasus into Mesopotamia, and thence proceeded into Cilicia, where a sanguinary engagement took place between him and Sarbar; the Persians were routed with immense slaughter, and Sarbar fled to Persia. During the next two years (626-628), the glory of H. culminated. He carried the war into the heart of the Persian empire, and 627, Dec., cut to pieces the forces of Rhazates, the Persian general, near the junction of the Little Zab and the Tigris. An immense booty fell into the hands of the victors. A few days afterward, H. took Artemita or Dastagerd, favorite residence of Chosroës, and here the Arabic historians exhaust hyperbole in attempting to state the enormous treasure which the Byzantine emperor captured. Chosroës fled into the interior of Persia, and was soon afterward seized, imprisoned, and starved to death by orders of his son and successor, Siroes, who was glad to conclude a peace with H., by which the Persians gave up all their former conquests. The fame of H. now spread over the whole world, and ambassadors came to him from the remotest kingdoms of the East and West; but a new and terrible enemy suddenly arose in the South. The Arabs, filled with the ardor of a new and fierce faith, had just set out on their career of sanguinary Mohammedan proselytism. The war begun during the life of the prophet himself, was continued by his successors Abubekr and Omar. H. no longer commanded the Byzantine forces himself, but wasted his days in his palace at Constantinople, partly in sensual pleasures, and partly in wretched theological disputations. His mighty energies were quite relaxed; and before the close of his life, Syria, Palestine, Mesopotamia, and Egypt were in the hands of the caliphs. After military campaigns which give him rank with the greatest generals of the world, he sank into a lethargy in which he seemed careless of his empire and of all great interests. The cause may have been in the ravages of the protracted disease of which he died.

HERALD.

HERALD, n. *hër'ăld* [OF. *hérauld* and *heralt*; F. *héraut*, a herald—from mid. L. *heral'dus*—from O.H.G. *haren*, to shout]: an officer who reads proclamations and regulates public ceremonies, etc.; one who orders and registers all matters connected with genealogy and armorial bearings; a precursor or harbinger; one who formerly carried messages between princes: V. to proclaim; to introduce, as by a herald. **HERALDING**, imp. **HERALDED**, pp. **HERALDIC**, a. *hè-răl'dik*, of or relating to heralds or heraldry. **HERALDICALLY**, ad. *-dī-kăl-lī*. **HERALDRY**, n. *hër'ăl-drī*, the art or practice of blazoning arms or ensigns armorial, etc.; the science which teaches how to blazon or explain in proper terms all that belongs to coats of arms (see below). **HERALDSHIP**, n. the office of a herald. *Note.*—O.H.G. *herolt*; Ger. *herold*, a herald, with which compare O.H.G. *Hariold*; Icel. *Haraldr*, Harold—contracted from *Hari-wald*—from *hari*, Ger. *heer*, an army; *wald* or *walt*, strength, thus = army-strength, a warrior, an officer—see Skeat.

HER'ALD: an officer whose duty consists in the regulation of armorial bearings, the marshalling of processions, and the superintendence of public ceremonies. In the middle ages, heralds were highly honored, and enjoyed important privileges; their functions included also the bearing of messages, whether of courtesy or defiance, between royal or knightly personages; the superintending and registering of trials by battle, tournaments, jousts, and all chivalric exercises; the computation of the slain after battle; and the recording of the valiant acts of the falling or surviving combatants. The office of H. is probably as old as the origin of coat-armor. The principal heraldic officers are designed kings-of-arms or kings-at-arms, and the novitiates or learners are styled pursuivants. Heralds were originally created with much ceremony; they are now appointed by the Earl Marshal in England, and by the Lyon King-of-Arms in Scotland. There are now in England three kings-of-arms, named by their offices Garter, Clarendieux, and Norroy; six heralds—Somerset, Chester, Windsor, Richmond, Lancaster, and York; and four pursuivants, Rouge Dragon, Portcullis, Blue Mantle, and Rouge Croix. There have been at different periods other heralds, whose titles are now laid aside; heralds extraordinary also have sometimes been created, as Edmonson, by the title of Mowbray, 1764. In Scotland, the principal heraldic officer is Lyon King-of-arms; and the permanent number of heralds and pursuivants in Scotland is now reduced to three of each. Ireland has one king-of-arms, Ulster; two heralds, Cork and Dublin; and two pursuivants, of whom the senior bears the title of Athlone, and the other is called the pursuivant of St. Patrick.

The official costume of a H. consists of an embroidered satin tabard or surcoat of the royal arms, and a collar of SS. See **KING-AT-ARMS**; **PURSUIVANT**; **HERALDS' COLLEGE**.

HERALDRY.

HERALDRY: properly the knowledge of all the multifarious duties devolving on a herald (see HERALD): in the more restricted sense, in which we here consider it, it is the science of armorial bearings. After occupying for ages the attention of the learned, and forming an important branch of a princely education, the study of heraldry fell, in later times, into neglect and disrepute, and was abandoned to coach-painters and undertakers, a degradation owing in part to the endless tissue of follies and mystifications that had been interwoven with it. Modern criticism has rescued heraldry from the pedantries and follies of the heralds, and imparted to it a new interest, as a valuable aid to historical investigations.

Though we have instances in remote times of nations and individuals distinguishing themselves by particular emblems or ensigns, nothing that can properly be called armorial bearings existed before the middle of the 12th c. The shields of the French knights in the first crusade presented a plain face of polished metal; and there is no evidence of heraldic devices in use in the second crusade 1147. But the Anglo-Norman poet Wace, in the latter part of the 12th c., mentions devices or cognizances as being in use among the Normans, 'that no Norman might perish by the hand of another; nor one Frenchman kill another;' and Wace is curiously corroborated by the Bayeux tapestry of the 12th c., where there are figures of animals on the shields of the invaders, while the Saxon shields have only borders or crosses. The rude devices on these shields have nothing approaching to an armorial form or disposition, yet it is probable that systematic heraldry sprang out of them, but it is difficult to say when they assumed that hereditary character essential to the idea of armorial bearings. Some sort of armorial insignia were depicted on the shields used in the third crusade, 1189; and in the same half century originated the fleurs-de-lis of France and the lions of England. The transmission of arms from father to son seems to have been fully recognized in the 13th c., and in the practice then introduced of embroidering the family insignia on the surcoat worn over the hauberk or coat of mail, originated the expression *coat of arms*. Arms were similarly embroidered on the jupon, cyclas, and tabard, which succeeded the surcoat, a practice which survived till the time of Henry VIII., when the tabard was entirely disused except by heralds, who still wear on their tabards the royal arms.

It was by slow degrees that the usage of arms grow up into the systematized form which it assumes in the works of the established writers on heraldry. The principal existing data for tracing its progress are English rolls of arms yet extant of the times of Henry III., Edward I., and Edward III. The earliest formal treatises date no further back than the end of the 14th c., before which time the whole historical part of the subject had been obscured by a tissue of gratuitous fictions which has misled most subsequent writers till a very recent period. The professors of the science represent the heraldry of the 10th and 11th c. as equally sharply defined with that of the 15th and 16th.

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The arms of William the Conqueror and his sons are described with all their differences; arms are ascribed to the Saxon kings of England, to Charlemagne, and even to half-mythical persons and heroes of classical times. It is surprising to find this fictitious heraldry understood and systematized early in the 14th c. The arms traditionally considered to be those of Edward the Confessor were sculptured in Westminster Abbey in the reign of Edward II.

In the infancy of heraldry, every knight assumed what arms he pleased, without consulting sovereign or king-at-arms. Animals, plants, imaginary monsters, things artificial, and objects familiar to pilgrims, all were fixed on; and whenever it was possible, the object chosen was one whose name bore sufficient resemblance in sound to suggest the name or title of the bearer of it. There is reason to believe that early arms were generally *armes parlantes*, though the allusion has in many cases ceased to be intelligible from the old name of the object being forgotten. The charge fixed on was used with great latitude, singly or repeated, or in any way which the bearer chose or the form of his shield suggested. But as coats of arms became more numerous, confusion often arose from different knights adopting the same symbol; and this confusion was increased by a practice which crept in of sovereigns or feudal chiefs allowing their arms, or part of them, to be borne as a mark of honor by their favorite followers in battle. Hence different coats of arms came in many instances so closely to resemble each other that it was imperative, for distinction's sake, that the fancy of the bearer should be restrained, and regulations laid down regarding the number and position of the charges, and the attitudes of the animals represented. This necessity led, in the course of time, to the systematizing of heraldry, a process which the rolls alluded to show us was going on gradually through the 13th and 14th c. By the time that heraldry was consolidated into a science, its true origin had been lost sight of, and the credulity and fertility of imagination of the heralds led them to invest the most common charges with mystical meanings, and to trace their original adoption to the desire of commemorating the adventures or achievements of the founders of the families who bore them. The legends ascribing an origin of this sort to the early armorial bearings have, in nearly all instances where it has been possible to investigate them, turned out to be fabrications. It was only when heraldry began to assume the dignity of a science that augmentations of a commemorative character were granted, one of the earliest known instances being the heart added to the coat of Douglas, in commemoration of the good Sir James's pilgrimage with the heart of King Robert. After the science became thoroughly systematized, augmentations and new coats were often granted with a reference to the supposed symbolical meanings of the charges.

In England, the assumption of arms by private persons was first restrained by a proclamation of Henry V., which prohibited every one who had not borne arms at Agincourt to assume them, except in virtue of inheritance or a grant

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from the crown. To enforce the observance of this rule, heralds' visitations or processions through the counties were instituted, and continued from time to time till the reign of William and Mary: see VISITATIONS, HERALDS'.

Jurisdiction in questions of arms is executed by the Herald's College in England, the Lyon Court in Scotland, and the College of Arms in Ireland. No one within the United Kingdom is entitled to bear arms without a hereditary claim by descent, or a grant from the competent authority; and the wrongful assumption of arms is an act for which the assumer may be subjected to penalties: see HERALDS' COLLEGE: LYON COURT. The use of arms, whether rightfully or wrongfully, subjects the bearer of them to an annual tax. It is illegal to use without authority not only a coat of arms, but even a crest. Any figure or device placed on a heraldic wreath (see WREATH) is considered a crest in questions with the Herald's College or Lyon Court, as well as in questions with the Commissioners of Inland Revenue. It shows how deeply the passion for outward distinction is implanted in human nature, when, in the United States, where all differences of rank are theoretically repudiated, we find many people assuming heraldic devices, each man at his own choice.

Besides individuals, communities and states are entitled to the use of arms, and heralds have classified arms, in respect of the right to bear them, under the following ten heads: 1. Arms of dominion, borne by sovereigns as annexed to their territories. 2. Arms of pretension, which sovereigns have borne, who, though not in possession, claim a right to the territories to which the arms belong: thus England bore the arms of France from the time of Edward III. till 1801. 3. Arms of community; pertaining to bishops' sees, abbeys, universities, towns, and corporations. 4. Arms of assumption, which one has a right to assume with the approbation of the sovereign: thus, it is said, the arms of a prisoner at war may be borne by his captor, and transmitted by him to his heirs. 5. Arms of patronage; added by governors of provinces, lords of the manor, patrons of benefices, etc., to their family arms, as a token of superiority, right, or jurisdiction. 6. Arms of succession, borne quartered with the family arms by those who inherit fiefs or manors, either by will, entail, or donation. Thus, the Dukes of Athole, as having been lords of the Isle of Man, quarter the arms of that island, and the Duke of Argyll quarters the arms of the lordship of Lorn. 7. Arms of alliance, taken up by the issue of heiresses, to show their maternal descent. 8. Arms of adoption, borne by a stranger in blood, to fulfil the will of a testator who, being the last of his family, may adopt a stranger to bear his name and arms and possess his estate: arms of adoption can be borne only with permission of a sovereign or king-at-arms. 9. Arms of concession; augmentations granted by a sovereign of part of his royal arms, as a mark of distinction, a usage which, as above observed, obtained in the earliest days of heraldry; hence the prevalence among armorial bearings of the lion, the fleur-de-lis, and the eagle, the bear-

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ings of the sovereigns of England and Scotland, of France, and of Germany. 10. Paternal or hereditary arms, transmitted by the first possessor to his descendants.

A coat of arms is composed of charges depicted on an escutcheon representing the old knightly shield. The word escutcheon is derived from the French *écusson*, which signified a shield with armorial bearings, in distinction from *écu*, a shield generally. The shields in use in England and France in the 11th and 12th c. were in shape not unlike a

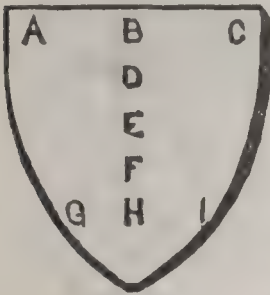


Fig. 1.

boy's kite, a form which seems to have been borrowed from the Sicilians; but when they became the recipients of armorial bearings, they were gradually flattened and shortened. From the time of Henry III., the escutcheon has been most frequently represented on seals as of something approaching to a triangular form, with the point downward, the chief exceptions being that the shield of a lady is lozenge-shaped, and of a knight-banneret square. To facilitate description, the surface or field of the escutcheon has been divided into nine points (fig. 1), technically distinguished by the following names: A, the dexter chief point; B, the middle chief; C, the sinister chief; D, the honor or collar point; E, the fess point; F, the nombril or navel point; G, the dexter base point; H, the middle base; and I, the sinister base point. It will be observed that the dexter and sinister sides of the shield are so called from their position in relation, not to the eye of the spectator, but of the supposed bearer of the shield.

Coats of arms are distinguished from one another, not only by the charges or objects borne on them, but by the color of these charges, and of the field on which they are placed. The field may be of one color, or of more than one, divided by a partition line or lines varying in form. The first thing, then, to be mentioned in blazoning a shield—that is, describing it in technical language—is the color, or, as it is heraldically called, *tincture* of the field. Tinctures are either of metal, color strictly so called, or fur. The metals used in heraldry are two—gold, termed *or*, and silver, *argent*—represented in painting by yellow and white. The colors are five—red, blue, black, green, and purple, known as *gules*, *azure*, *sable*, *vert*, and *purpure*. Metals and colors are indicated in uncolored heraldic engravings by points and hatched lines, an invention ascribed to Father Silvestro di Petrasancta, Italian herald of the 17th c. *Or* (fig. 2) is represented by points; for *argent*, the field is left plain. *Gules* is denoted by perpendicular, and *azure*, by horizontal lines; *sable*, by lines perpendicular and horizontal crossing each other; *vert*, by diagonal lines from dexter chief to sinister base; *purpure*, by diagonal lines from sinister chief to dexter base. The *furs* were originally but two, *ermine* and *vair*. The former is represented by black spots resembling those of the fur of the animal called ermine, on a white ground. *Vair*, said to have been taken from the fur of a squirrel, bluish-gray on the back,

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and white on the belly, is expressed by blue and white shields, or bells in horizontal rows, the bases of the white resting on the bases of the blue. If the vair is of any other colors than white and blue, they must be specified. Various modifications of these furs were afterward introduced, among others, *ermine*, or ermine with the field

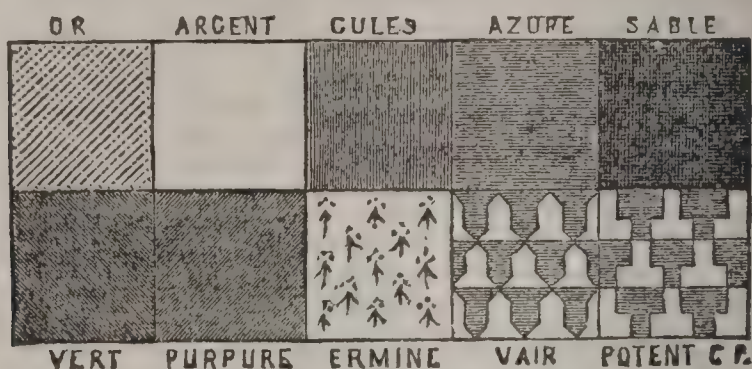


Fig. 2.

sable and the spots argent; *erminites*, with a red hair on each side of the black spot; *pean*, with the field sable, and the spots or; *counter-vair*, or vair with the bells of one tincture placed base to base; and *potent counter-potent*, vair with crutch-shaped figures instead of bells.

It is an established rule of heraldry that metal should not be placed on metal, nor color on color; a rule more rigidly adhered to in English heraldry than in that of other countries. There is one remarkable transgression of it in arms of the kingdom of Jerusalem founded by the Crusaders, which are argent, a cross potent between four crosses or. A recognized exception exists wherever a charge lies over a field partly of metal and partly of color, or where an animal is (see *infra*) attired, armed, unguled, crowned, or chained with a tincture different from that of his body. Marks of cadency, chiefs, cantons, and bordures also are occasionally exempted from the general rule, being, according to some heralds, not laid on the shield, but *cousu* or sewed to it.

Everything contained in the field of an escutcheon is called a *charge*. Charges are divided by heralds into the three class of honorable ordinaries, sub-ordinaries, and common charges. Under the name of ordinaries or *honorable ordinaries* are included certain old and very frequent bearings, whose true peculiarity seems to be that, instead of being taken from extraneous objects, they are representations of the wooden or metal strengthenings of the ancient shields. They are ten in number: 1. The *Chief* (fig. 3), the upper part of the shield separated from the rest by a horizontal line, and comprising, according to the requirements of heralds, one-third of it, though this proportion is seldom rigidly adhered to: its diminutive is the *fillet*, supposed to take up one-fourth the space of a chief, in whose lowest part it stands.

2. The *Pale* (fig. 4), band or stripe from top to bottom, said, like the chief, to occupy one-third of the shield: it

has two diminutives, the *Pallet*, one-half in breadth of the pale, and the *Endorse*, one-half of the pallet.

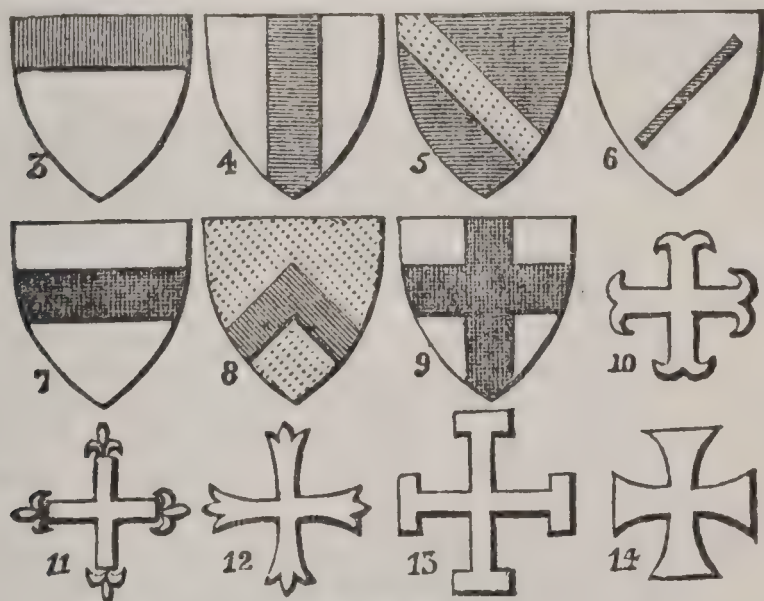
3. The *Bend* (fig. 5), similar band crossing the shield diagonally from the dexter chief to sinister base: its diminutives are the *Bendlet* or *Garter*, one-half of its breadth; the *Cost* or *Cottise*, one-half of the bendlet; and the *Riband*, one-half the cottise. The bend is sometimes borne between two cottises, in which case it is said to be *Cottised*, a term sometimes applied with doubtful propriety to the other ordinaries when accompanied with their diminutives.

4. The *Bend Sinister*, diagonal band from sinister chief to dexter base: its diminutives are the *Scarpe*, one-half of the bend sinister; and the *Baton* (fig. 6), one-half of the scarpe. The baton stops short of the extremity of the field at both ends, and has been considered a mark of illegitimacy: see **BASTARD BAR**.

5. The *Fess* (fig. 7), horizontal band in the middle of the shield, said, like the ordinaries already enumerated, to occupy one-third of it: its principal diminutive is the *Bar*, containing the fifth part of the field; and there are also the *closet*, one-half of the bar, and the *Barrulet*, one-half of the closet, the latter seldom borne singly.

6. The *Chevron* (fig. 8), two stripes descending from the centre of the shield in diagonal directions like the rafters of a roof: its diminutives are the *Chevronel*, of half, and the *Couple-close*, one-fourth its width, the latter borne as its name implies, in pairs, and generally accompanying the chevron—on each side of it.

7. The *Cross* (fig. 7), uniting the pale and fess, an ordinary originally like the rest, composed of the clamps necessary

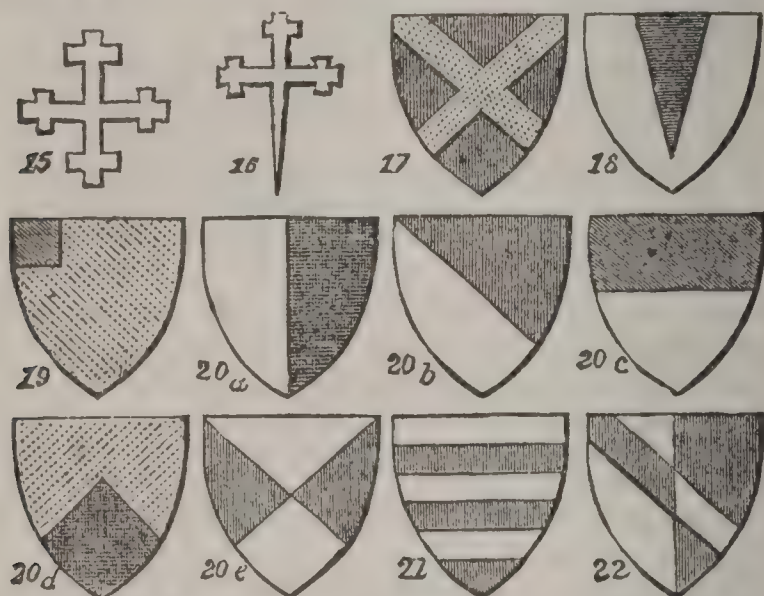


Figs. 3—14.

to the strength of the shield, but had also the deeper meaning of the symbol of the Christian faith. Besides its plain form, the cross was varied in numerous ways, most of these varieties being, however, common charges rather than ordinaries. Of the 39 lesser crosses mentioned by Guillim, and 109 by Edmonson, a few of the most frequent are the following: *Cross moline* (fig. 10), with the ends turned

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round both ways; *Cross fleury* (fig. 11), of which each limb terminates in a fleur-de-lis; *Cross patonce* (fig. 12), each limb of which has three points; *Cross potent* (fig. 13), crutch-shaped at the ends; *Cross pattée* (fig. 14), small in the centre, but widening toward the ends; *Cross crosslet* (fig. 15), crossed at the ends. The latter is the most frequent of all, and borne oftener in numbers than singly. Any of these crosses is said to be *fitchée*, when the lower limb terminates in a sharp point, as in fig. 16. There is also the *Cross Miltese*, whose limbs have each two points, and converge to a point in the centre of the cross; though not



Figs. 15—22.

frequent as a heraldic charge, it derives an importance from being the badge of the Knights of Malta and of many other orders.

8. The *Saltire*, or St. Andrew's Cross (fig. 17), formed by a junction of the bend dexter and bend sinister.

9. The *Pile* (fig. 18), wedge with the point downward: a single uncharged pile should, at its upper part, occupy one-third the breadth of the shield, but if charged, it may be double that width.

10. The *Quarter*, consisting of the upper right-hand fourth part of the shield cut off by a horizontal and a perpendicular line: its diminutive is the *Canton* (fig. 19).

Armorial figures may be depicted on any of these ordinaries, but not on their diminutives, with the exception of the canton.

We observed that the field of an escutcheon may be of two different tinctures, divided by a partition-line, which line may vary in direction. When divided by a partition-line in the direction of one of the ordinaries, the shield is said to be *Party per* that ordinary; thus we may have (fig. 20) a shield party per pale, bend, fess, chevron, or saltire. An escutcheon divided as by a cross is said to be quartered. A shield divided into any number of parts by lines in the direction of a pale, bend, or bar, is said to be *Paly*, *Bendy*, *Barry*, the number of pieces being specified, as in the example fig. 21, barry of six, argent and gules.

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When the field is of a metal and color separated by any of the lines of partition, then the charge placed on it is said to be *Counter-changed*: this means that the part of the charge which is on the metal is of the color, and *vice versâ*, as in fig. 22, the arms borne by Chaucer the poet, per pale argent and gules, a bend counter-changed.

The partition-line which bounds the field, or the boundary-line of an ordinary, is not always even. Fig. 23 represents the commonest forms of irregular partition-lines in use, viz., the *engrailed*, *invected*, *wavy*, *nebulé*, *embattled*, *indented*, and *dancetté*. An ordinary engrailed has the points of the engrailed line turned outwards, and an ordinary invected, inwards. Dancetté differs from the indented by the partition-line being marked with only three indentations.

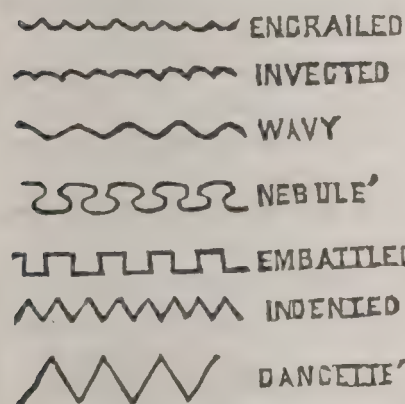


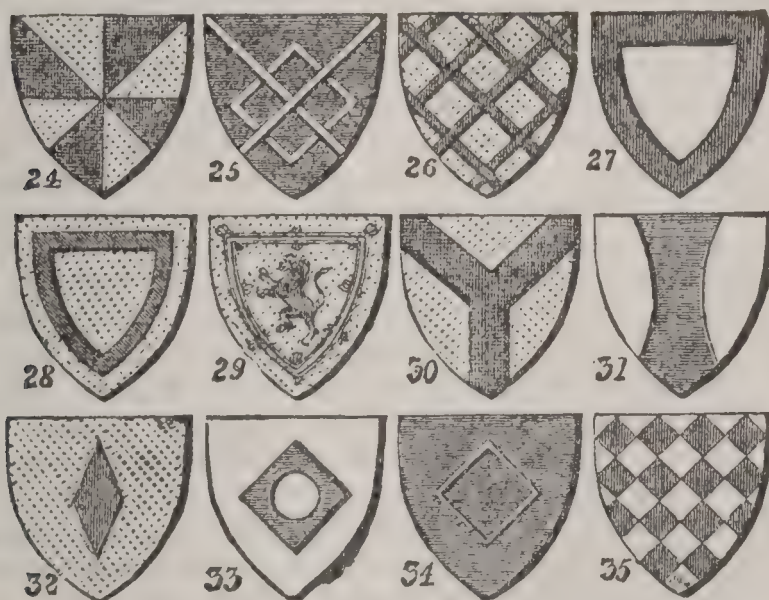
Fig. 23.

the triangles, or at least the triangle in dexter chief, is a gyron. Gyronny of six, ten, or twelve also occasionally occur, so called according to the number of the triangles.

2. The *Fret* (fig. 25) is a cognizance derived from the banding or ornamenting of the shield, and a shield cov-

The *Subordinaries*, or subordinate ordinaries, are, generally, enumerated as the following, though there is no very clear line of demarcation between them and the common charges.

1. The *Gyron*.—When a shield is at once quartered and party per saltire, as in fig. 24, the division is called *Gyronny of eight* (from *gyrus*, a circle), and one of



Figs. 24—35.

ered with this lattice-work decoration (fig. 26) is said to be *Fretty*.

3. The *Bordure*, or border (fig. 27), stripe encircling the shield; much used to distinguish different branches of a

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family, and is often charged with small devices, on which account it has sometimes been reckoned an honorable ordinary.

4. The *Orle* (fig. 28) differs from a bordure in not touching the extremity of the shield.

5. The *Tressure*, regarded as a diminutive of the orle, is generally borne double, and flory counter-flory, as in the arms of Scotland, or, a lion rampant within a tressure flory counterflory gules (fig. 29).

6. The *Pall* (fig. 30), the archiepiscopal ornament of that name, sent from Rome to metropolitans, and resembling in form the letter Y.

7. The *Flanches* (fig. 31), the dexter and sinister sides of the shield cut off by a curved line: these are always borne in pairs, and sometimes charged.

8. The *Lozenge*, figure of four equal sides, with the upper and lower angles acute, and the others obtuse.

9. The *Fusil* (fig. 32), longer and more acute than the lozenge.

10. The *Rustre* (fig. 33), lozenge pierced round in the centre.

11. The *Mascle* (fig. 34), lozenge perforated, and showing a narrow border. Mascles were probably originally links of chain-armor.

A field is said to be *Lozengy* (fig. 35), *Fusilly* or *Mascally*, when divided by diagonal lines in the direction of these subordinaries. A field divided by horizontal and perpendicular lines into squares of different tinctures, is said to be *Checky*; in the case of a *Fess checky* there are three such rows of squares.

Among subordinaries are sometimes reckoned certain circular charges called *Roundels* or *Roundlets*, distinguished in English heraldry by different names according to their tinctures. When of or, they are called *Bezants*; of argent, *Plates*; of gules, *Torteaux*; of azure, *Hurts*; of purpure, *Golpes*; and of sable, *Ogresses* or *Pellets*.

We come now to the third class of figures occurring in armorial bearings. We have seen that the ordinaries and subordinaries are for the most part purely heraldic figures, connected in their origin with the shield itself; the *common charges*, on the other hand, are representations more or less conventional of familiar objects, which have no necessary relation to the shield; but are in some way emblematic as concerns family or individual history and character. The knights, in the early days of heraldry, ransacked the animal, the vegetable, and the mineral kingdom, as well as the range of things natural and artificial, for cognizances which would be distinctive, and at the same time suggestive, of the name or title of the bearer of them. We enumerate a few of the most frequent charges.

Of beasts, the *lion* requires special mention. The king of beasts is one of the most frequent of heraldic devices, and is made to assume a great variety of attitudes (see *LION*). Lions and other beasts of prey are said to be *armed* or *langued* of any tincture when their teeth and claws, or their tongue, is of that tincture. With some change of

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color or position, the royal beast came to be used by all who could claim kindred, however remote, with royalty, and lions were further multiplied by augmentations granted by the sovereign to favorite followers. The heraldic *leopard*, the subject of much controversy, was originally but another designation for the lion passant-gardant. Bears, boars, bulls, stags, are favorite heraldic beasts. A stag walking is said to be *trippant*; he is *at gaze* when a lion would be statant-gardant; he is *attired* of any tincture when his horns are of that tincture. The animals that possess horns and hoofs are said to be *armed* and *unguled* in respect of them. The heads and limbs of animals are often borne as charges, and they may be either *couped*, cut off in a straight line, or *erased*, cut off with a jagged edge.

Of birds, we have first the *eagle*. The sovereign of birds, and symbol of imperial Jove, was, next to the lion, the most favorite cognizance of royal personages, and was adopted by the German emperors, who claimed to be successors of the Cæsars of Rome. The imperial eagle had at first but one head; the monstrosity of a second head seems to have arisen from a dimidiation of two eagles, to represent the eastern and western empire (see MARSHALLING OF ARMS). The eagle of heraldry is most generally *displayed*, i.e., its wings are expanded; sometimes it is *preying*, or standing devouring its prey. The *alerion*, the cognizance of the duchy of Lorraine, and the family of Montmorency, was originally but a synonym for the eagle assumed (M. Planché suggests) as an anagram for the word Lorraine, but modern heralds have degraded it into a nondescript creature without beak or claws. The *martlet* was originally a martin, a species of swallow, which has also in course of time been deprived by heralds of its legs and beak. The pelican, the swan, the cock, the falcon, the raven, the parrot or popinjay, and the peacock, are of frequent occurrence. The *pelican* has generally her wings *indorsed*, or placed back to back, and is depicted pecking her breast. When in her nest feeding her young, she is called a pelican *in her piety*. A *peacock* borne affronté with his tail expanded, is said to be *in his pride*. Birds of prey are *armed* of the color of which their beak and talons are represented. Such as have no talons are *beaked* and *membered*. The *cock* is said to be *armed*, *crested*, and *jelloped*, the latter term referring to his comb and gills. Birds having the power of flight are, in respect to their attitude, *close*, *rising*, or *volant*.

Fishes and reptiles occur as charges: the former are said to be *naiant*, if drawn in a horizontal, and *hauriant*, if drawn in a perpendicular position; and the *dolphin*, in reality straight, is conventionally borne *embowed* or bent. The *escallop shell* is of frequent occurrence, and said to be the badge of a pilgrim. Sometimes the conventional heraldic form of an animal differs from its true form, as in the case of the *antelope* of heraldry (fig. 36), which has the head of a stag, a unicorn's tail, a tusk issuing from the tip of the nose, a row of tufts down the back of the neck and similar tufts on the tail, chest, and thighs.



Fig. 36.

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Of 'animals phantasticall' we have among others the gryphon, wyvern, dragon, unicorn, basilisk, harpy. We have the human body in whole or part, a naked man, a savage or wild man of the woods, also arms, legs, hearts, Moors' heads, Saracens' heads, and that strange heraldic freak, the three legs conjoined, carried in the escutcheon of the island of Man.

Of plants, we have *roses, trefoils, cinquefoils, leaves, garbs* (i.e., sheaves of corn), *trees*, often *eradicated* or *fructuated* of some other color, and above all, the celebrated *fleur-de-lis*, used as a badge by Louis VII. of France before heraldry had existence. When a plant, animal, or other charge is blazoned *proper*, what is meant is that it is of its natural color.

The heavenly bodies, the sun, moon, and stars, also are pressed into the service of heraldry, as are things inanimate and artificial without number, particularly such as were familiar to the warriors and pilgrims of the 12th and 13th c. Helmets, buckles, shields, hatches, horseshoes, swords, arrows, battering-rams, pilgrims' staves, mullets (or spur-rowels), and water-bougets, or bags, in which in crusading times water was carried long distances across the desert, also the clarion or war-trump, generally and erroneously called a *rest*. Even the letters of the alphabet have been used as charges.

Charges may be placed either simply on the field or on one of the ordinaries; in some instances, one of the ordinaries is placed over a charge, in which case the charge is said to be *debruised* by the ordinary. Three charges of one kind are placed two above and one below, unless blazoned *in fess* or *in pale*. In the 14th and 15th c. the simplicity of early heraldry began to be departed from by accumulating a variety of charges on one shield, and in later times we have sometimes a charge receiving another charge like an ordinary. The growing complexity of shields arose from augmentations granted to distinguish the younger branches of a family, or charges assumed from the maternal coat by the descendants of an heiress. In the end of the 18th, and beginning of the 19th c. a practice prevailed for a time of introducing into armorial bearings matter-of-fact landscapes, representations of sea-fights, and of medals and decorations worn by the bearer, setting all heraldic conventionalities at defiance, and dealing in details not discernible on the minutest inspection. The grants proceeding from the present kings of arms are more conformable to the usage of heraldry.

The arms of the different members of a family have been distinguished from one another, sometimes by the use of a bordure or other difference, and sometimes, especially by English heralds, by the use of certain figures called *marks of cadency*, the *label, crescent, mullet, martlet, annulet, fleur-de-lis*, to designate the eldest, second, third, fourth, fifth, or sixth son and his descendants—an invention originating about the time of Henry VII., but which cannot consistently be carried through all the ramifications of a family for a succession of generations: see CADENCY.

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Blazonry is an essential part of the science of arms. To blazon a coat is so to describe it that any one with an ordinary knowledge of heraldry will be able to depict it correctly. In the language of blazonry, all tautology must be avoided. The tincture of the field is first mentioned; the ordinary, if any, follows, unless it be a chief; than the charges between which the ordinary is placed. The charges on the ordinary follow, and lastly we have a canton, or chief, and marks of cadency. For the rules of blazoning, see BLAZON—BLAZONRY.

Besides the heraldic devices depicted on the shield, there are the following borne external to it — the helmet, the mantling, the wreath, the crest, the motto and scroll, the supporters, and the coronet.

The *helmet*, originally a piece of defensive armor, became in the course of time one of the usual accompaniments of the shield; and placed over the arms, it came by its form to mark the rank of the wearer. For these distinctions, recent, and applicable only to British heraldry, see HELMET.

The *mantling* is an embellishment of scroll-work flowing down on both sides of the shield, and originating in the *cointoise*, or scarf, wrapped round the body in the days of coat-armor.

From the centre of the helmet, within a *wreath* of two pieces of silk of the first two colors of the armorial bearings, issues the *crest*, originally a special mark of honor worn only by heroes of great valor or advanced to a high military command; now an inseparable adjunct of the coat of arms in English, though not in continental, heraldry, and often assumed or changed arbitrarily without proper authority.

The *scroll*, placed over the crest or below the shield, contains a *motto*, bearing in many cases an allusion to the family name or arms.

Supporters are figures or animals standing on each side of the escutcheon, and seeming to support it. They were in their origin merely ornamental devices, which gradually acquired heraldic character. In England, the right to use supporters is confined to the royal family, peers, peeresses, and peers by courtesy, knights of the Garter, knights grand cross of the Bath, and a very few families whose ancestors bore supporters before their general use was restricted. In Scotland, supporters are also used by the baronets of Nova Scotia and the chiefs of various families.

The crown of the sovereign, the mitre of the bishop, and the coronet of the nobility are adjuncts appended to the shield of those whose dignity and office entitle them to that distinction. For a description of the crown of Great Britain and the coronets of the royal family, see CROWN. For the coronets appropriated to different ranks of nobility, see DUKE: MARQUIS: EARL: VISCOUNT: BARON.

As to arrangement of various coats in one escutcheon, see MARSHALLING OF ARMS. A husband is entitled to *impale* the arms of his wife, i.e., to place them on the same shield side by side with his own. When the wife is an

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heiress, the husband bears her arms in an *escutcheon of pretense*, or small escutcheon in the centre of his own shield, and the descendants of the heiress may quarter her arms with their paternal coat. A sovereign also quarters the arms of his several states, and feudal arms are sometimes quartered by subjects. An elective king, it is said, may place his hereditary arms on an escutcheon of pretence over the insignia of his dominions.

For information on the details of heraldry, reference is made to the standard works of Guillim, Edmonson, and Nisbet, and for a more discriminating view of the subject, to such recent treatises as Montague's *Heraldry*, and Planché's *Pursuivant of Arms*.

HERALDS' COLLEGE, or **COLLEGE OF ARMS**: collegiate body, founded by Richard III., 1483, consisting of the heraldic officers of England, who were assigned a habitation in the parish of All-hallows-the-Less, London. Various charters confirmed the privileges of the College of Arms, and it was reincorporated by Philip and Mary, who bestowed on it Derby House, on whose site, in Doctors' Commons, the present college was built by Sir Christopher Wren.

The presidency of the college is vested in the earl marshal, an office now hereditary in the family of Howard, Duke of Norfolk; he nominates the three kings of arms, six heralds, and four pursuivants, who are the members of the collegiate chapter. Persons having a hereditary claim to arms, which has been disused for one or more generations, are empowered by the Heralds' College to resume them, on proof and registration of pedigree. A person who has no hereditary claim, and wishes a grant of arms, must memorialize the earl marshal, and show that he is in a condition to 'sustain the rank of gentry.' An important department of the Heralds' College is the recording of pedigrees. Any pedigree showing the existing state or descent of a family may, if accompanied with sufficient evidence, be entered on the books of the college. The members of the college have salaries, but derive their principal income from fees charged for assistance in tracing pedigrees and titles, and for the granting and registration of arms. In Scotland, the corresponding functions belong to the **LYON COURT** (q.v.).

HERAT, *hér-ât'*: capital of the most westerly of the three divisions of Afghanistan, on the river Heri, 2,500 ft. above the sea; lat. 34° 50' n., long. 62° 30' e.; 390 m. w. of Cabul. Situated near the boundaries of Afghanistan, Persia, and Independent Tartary, H. is one of the principal marts of central Asia; also it has extensive manufactures of its own in wool and leather. The vicinity, naturally fertile, has been rendered much more so by irrigation. But the city claims notice mainly on political and military grounds. Long the royal seat of the descendants of Timur, and often an object of contention between the warlike tribes all round, it is fortified by a ditch and wall, and is commanded on its n. side by a strong citadel. In more

HERAULT—HERB.

modern times, the place has acquired a kind of European importance, for its central situation on all lines of communication—being, toward Persia, the key of Afghanistan, which, again, in turn affords the only approach by land to Western India; hence H. has been viewed as an outpost of England's Indian empire against Russian intrigue and encroachment. It has been the subject of treaties and the occasion of wars between Great Britain, as mistress of Hindustan, and Persia, as virtually a vassal of Russia. This feature of the history of the city was specially developed in connection with the last conflict between Persia and England. In 1856, Nov., the shah, regarded by the British government as the vassal and agent of the czar, captured H., while actually conducting negotiations for an amicable adjustment at Constantinople; but he was within a few months, constrained to relinquish his prey and renounce his claims by a British expedition directed against the opposite extremity of his empire. The population has fluctuated within the century from 100,000 to 10,000; the average pop. now being about 30,000. See Malle-son's *Herat* (1880).

HERAULT, *ā-rō'*: maritime department in s. France bounded s.e. by the Gulf of Lyon. It is oval in form, 84 m. in greatest length from e. to w.; 2,436 sq. m.; pop. (1901) 489,421. It is occupied in the n. and n. w. by the Lower Cevennes mountains, from which several branches of moderate elevation extend south, gradually subsiding as they approach the sea. The principal rivers are the Hérault (from which the dept. is named), the Orb, and the Lez, which, rising in the Cevennes, pursue a generally southward course to the Mediterranean. The coast-line is about 66 m. in length; and along the shore, from Agde to the Vidourle, are numerous *étangs*, or marshy lakes, united by the Canal-des-Etangs, and communicating with the sea. In the neighborhood of the *étangs*, the climate is unhealthful, especially in summer, when agues and fevers prevail; but elsewhere throughout the dept. it is unusually fine. About a fourth of the entire area is arable and about a sixth is under vineyards. The dept. stands, for quantity, next to Aude, at the head of the wine-growing departments of France, the annual produce being about 130,000,000 gallons. From the shore-lakes and the sea, immense quantities of fish are obtained. Woolen, silk, and cotton fabrics, in great variety, are largely manufactured. Coal and copper-mines, and quarries yielding variously veined marbles, building-stone, granite, etc., are worked. H. supplies a great quantity of the salt used in France. It is divided into four arrondissements. Montpellier is the capital.

HERB, n. *herb* [F. *herbe*—from L. *herba*, grass, vegetation]: a plant or vegetable with a soft stalk or stem; a herbaceous plant as opposed to one with a woody stem above ground. In some herbs the stem is woody, but still annual. There is, however, in many a permanent woody *rhizome* or root-stock.—In books of gardening, plants used

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only for flavoring are sometimes distinguished as *sweet herbs*, as mint, basil, etc.; while those valued for nutritive qualities are known as *pot herbs*. HERB'LESS, a. *lēs*, having no herbs. HERBACEOUS, a. *hēr-bā'shūs* [L. *herbāciūs*, grassy]: pertaining to or having the nature of herbs; applied to any portions of a plant more particularly green and succulent. HERBAGE, n. *hēr'bāj* [F.]: grass; pasture; herbs collectively. HER'BAL, n. *-bāl*, a book which contains a classification and description of plants; a collection of specimens of plants dried and preserved: ADJ. pertaining to herbs. HER'BALIST, n. *-ist*, one who collects or sells herbs; a practical botanist. HER'BARY, n. *-bēr'ī*, a herb-garden. HERBES'CENT, a. *-bēs'ēnt* [L. *herbes'cens*, growing green]: growing into herbs. HERBIVORA, n. plu. *-biv'ō-rā* [L. *vorō*, I eat]: an order of ungulate or hoofed animals, feeding wholly on herbs or vegetables. Different naturalists vary in their classification of animals in this order. HERBIV'OROUS, a. *-rūs*, eating or living on herbs or vegetable substances. HERBORIZE, v. *hēr'bōr-īz*, to search for plants, or seek for new species. HER'BORIZING, imp.: N. going about seeking for and gathering medicinal herbs. HER'BORIZED, pp. *-īzd*. HERBORIZA'TION, n. *-zā'shūn*, act of seeking for plants in the field; figures of plants in mineral substances. HERBOSE, a. *hēr-bōs'*, or HERBOUS, a. *hēr'būs*, abounding with herbs. HERBAR, n. *hēr'bār*, in *OE.*, a collection of flowers. HER'BARISM, n. *-īzm*, in *OE.*, the business or study of the herbarist. HER'BARIST, n. *-ist*, in *OE.*, one skilled in the names and virtues of herbs. HERBELET, n. *hēr'bēl-ēt*, a small herb. HERBY, a. *hēr'bī*, in *OE.*, having the nature of herbs or pertaining to them.

HERBARIUM, n. *hēr-bā'rī-ūm* [Lat. *herbāriūm*, book describing herbs; *herbāriūs*, one having knowledge of plants (see HERB)], called also *Hortus Siccus* [Lat. dry-garden]: prepared collection of dried plants for the study and examination of botanists. For collecting plants, a box of tinned iron, called a *vasculum*, is generally used, which preserves most plants from withering for at least some hours. Plants intended for the H. should be collected on a dry day; plants which when gathered have moisture on their leaves, should, when brought home, be set in a vessel of water, and there allowed to dry. Plants with thick succulent stems or leaves are immersed for a few seconds in boiling water to kill them, lest they should continue to grow. The specimens are then laid between layers of blotting-paper, or of a thick bibulous kind of paper called botanical drying-paper, not spread out with anxious minuteness, nor so placed as to distort their parts. The number of sheets of paper in each layer is accommodated to the nature of the plants, and pressure is applied by weights, screws, or straps, the whole being inclosed in boards, and the layers of paper, when very numerous, having also boards occasionally interposed. Care must be taken that too much pressure be not applied at first, lest the parts of the plants be unfitted for future examination. For a short time, the paper is changed every day, or every second day, dry paper being supplied. Specimens have

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the best appearance which are quickly dried. Some plants which, in spite of all care, lose their natural colors in the ordinary method of drying, and become black, as orchids, may be beautifully dried by inclosing the layers of paper in a network wire-frame, and hanging the package before a fire, where it is turned round like meat roasting. Specimens are thus dried in a few hours, which otherwise would have required eight or ten days.—When the specimens are fully dried, they are laid within sheets of writing paper, or they are gummed or glued to sheets of paper, the name of the species, with the locality, date of collection, and any other interesting particulars being marked beside each. As much as possible of each plant is preserved in the H., but the flower and leaf must always be exhibited. Some parts of plants, as succulent roots, fruits, etc., are otherwise preserved. The H. is arranged according to a botanical system. The methods differ: in the United States, usually, the species in the genera, and the genera in the orders, are arranged alphabetically, and the orders serially; sometimes genera are placed alphabetically throughout without regarding the orders. The alphabetical system has advantages; but in Europe it is seldom used, on account of its counter-balancing inconveniences in practice. Better than keeping a catalogue of the species in the H., constantly needing changes by additions, is the plan of marking in some systematic botanical work, the species contained, and those added. Care must be taken to preserve the H. from the ravages of moths and beetles by frequent inspection, by the aid of camphor, and by the occasional application of a little corrosive sublimate. There are herbaria in existence which are centuries old, and which are still consulted for identification of species. The H. enables us to compare plants which flower at different seasons, and those of different countries. The herbaria formed by travellers have been of great importance to the progress of botany.

HERBART, *hër'bärt*, JOHANN FRIEDRICH: 1776, May 4—1841, Aug. 16; b. Oldenburg: German philosopher. He was educated at Jena. At a very early age, he was familiar with religious and metaphysical doctrines and discussions, and at 12 years had read the systems of Wolff and Kant. He became the pupil of Fichte, and received his philosophy with enthusiasm; but after more reflection, he found himself obliged to reject much of his system, and to form one of his own. In 1805, he was appointed extraordinary prof. at Göttingen; in 1809, he obtained the chair of philosophy at Königsberg. In 1833, he returned to Göttingen, where he remained till death. His collected works were published by his scholar Hartenstein (12 vols. Leipz. 1850–52).

The starting-point of H.'s metaphysics is the thesis that the ordinary (metaphysical or popular) conceptions of a thing with attributes, change, matter, and self-consciousness contain in themselves contradiction. The multiplicity and variety of the world of phenomena cannot be explained on the hypothesis of only one real (substance); a multipli-

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city of reals (monads) must be assumed, and out of their mutual relations, time, space, nature, and thought arise. In ethics, H. rejects Kant's autonomy of the pure reason as basis, and founds on developed and cultured feeling or common sense—in this resembling Shaftesbury. The five practical ideas are freedom, perfection, benevolence, justice, and fairness. In opposition to contemporary idealism, H. called his system realism. Since Kant, H. ranks next to Hegel among German philosophers, and on the fall of Hegelianism in Germany, Herbart's system became prominent and has still numerous adherents in the universities; though there seems ground for the judgment that his critical was better than his constructive work in philosophy. In psychology, H. endeavored, by regarding ideas or states of mind as so many physical forces, to understand their relations to one another at any given time by help of a most elaborately wrought-out mathematical calculus. He certainly contributed much toward a scientific basis for psychology. The *Pædagogic* of H. is admirably practical.

HERBELOT, *ër-blō'*, BARTHÉLEMY D': 1625, Dec. 4—1695, Dec. 8; b. Paris: orientalist. He became prof. of Syriac in the College of France, and died at Paris. His celebrated work, *Bibliothèque Orientale*, was published after his death by Galland (Paris 1697), afterward with a supplement (Maestricht 1776–81); but the best edition was published at the Hague (1777–82, 4 vols.). It is unfortunate that H. was unable to give the finishing touch to a work which had cost him so much labor and research, and which, in spite of the errors and omissions and even contradictions, still bears a deservedly high character. It contains extracts from a multitude of Arabian, Persian, and Turkish authors.

HERBERT, *hër'bért*: family prominent in British history. It has been ennobled at various times, in so many of its branches, by so many ancient and renewed creations, that it is difficult to ascertain with certainty which is the parent stem; though Sir Bernard Burke is inclined to give the representation of the House to Henry Arthur H., M.P., of Muckross, co. Kerry. It is certain that the Herberts came over to England in the train of William the Conqueror, for H., Count of Vermandois, who afterward filled the post of chamberlain under William II., is mentioned in the Roll of Battle Abbey, and received from his sovereign a grant of lands in Hampshire. His wife Emma, daughter of Stephen, Count of Blois, was a granddaughter of the Conqueror, and his son H. (called in history H. of Winchester) was chamberlain and treasurer to King Henry I. Seven or eight generations later, we find the Herberts diverging into several distinct branches, including the lines of the Earls of Powis (now extinct in the male line), of the Lords H. of Cherbury (also extinct), the Herberts of Muckross (ancestors of Henry Arthur H., mentioned above), and also several untitled branches which have flourished on their ancestral lands in England, Wales, and Ireland. In the

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reign of Henry V., Sir William H. of Raglan Castle, co. Monmouth, received the honor of knighthood for his valor in the French wars. His eldest son, a staunch adherent of the House of York, was created Earl of Pembroke * by Edward IV. 1469, but fell into the hands of the Lancastrians after the battle of Danes, Moor, and was beheaded the following day, when the title became extinct. It was, however, revived 1551, in the person of his (illegitimate) grandson, William H., K.G., one of the most influential noblemen of his age, and one who was active in public affairs, both as statesman and as soldier. It is recorded by Sir B. Burke, that 'he rode on February 17, 1552-3, to his mansion of Baynard's Castle, with 300 horse in his retinue, 100 of them being gentlemen in plain blue cloth, with chains of gold, and badges of a dragon on their sleeves.' He was buried in Old St. Paul's, and his funeral was conducted on such a scale of magnificence that, according to Stowe, the mourning given away on that occasion cost £2,000—a very large sum in those days. By his wife, who was a sister of Catharine Parr (last queen of Henry VIII.), he had a son Henry, second earl, K.G., to whose countess, Mary, daughter of Sir Henry Sydney, K.G., Sir Philip Sydney dedicated his *Arcadia*. She is celebrated by Ben Jonson in the well-known lines—

Underneath this marble hearse
Lies the subject of all verse—
Sidney's sister, Pembroke's mother.

The fourth earl, some time lord chamberlain to Charles I., and chancellor of the Univ. of Oxford, was the founder of Jesus College in that seat of learning. The eighth earl held several high offices under Queen Anne, including that of lord high admiral. From him the present earl of Pembroke (George Robert Charles H., b. 1850) is directly descended. The late Lord Herbert (q.v.) of Lea—better known as Mr. Sidney Herbert—was younger brother of the late, and father of the present earl. The Earls of Carnarvon, more than one of whom have gained celebrity in literature, descend from the eighth Earl of Pembroke, mentioned above. The present Earls of Powis are descended from the same stock maternally, the only child and heiress of the last Earl of Powis of a previous creation having married the eldest son of the illustrious Robert Clive, the founder of the British Indian Empire, in whose favor that title was renewed 1804.

HERBERT, EDWARD (Baron HERBERT OF CHERBURY): 1582-1648, Aug. 20; b. Eyton, Shropshire; of noble family: commonly reckoned the first of the English deistical writers. In his Autobiography, he has described his early love for inquiry and his scrupulous truthfulness. He was sent to Oxford in his 12th year, and before he had quite finished his studies, he married an heiress. On the occasion of the coronation of James I., he was made a knight, and invested with various offices. Although his marriage was not unhappy, there

* The earldom of Pembroke was originally conferred on Richard de Clare, the celebrated Strongbow, who aided Henry II. in the conquest of Ireland.

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appears to have been little warmth of affection between him and his wife, who was considerably older than himself. He left home, accordingly, for travel in France, 1608, and from that time resided much abroad. In Paris, he lived on terms of intimacy with the Constable Montmorency, Jean Casaubon, and other distinguished men. After a brief return to his native country, he set out again 1610 for the Low Countries, where he joined the arms of the brave Maurice of Orange. For this prince he contracted a great affection, and again offered him his services 1614. After a campaign, he travelled through Germany and Italy on horseback, and went as far as Venice, Florence, and Rome. On his return, he fell into trouble by an attempt to raise a troop of Protestant soldiers in Languedoc for the Duke of Savoy. Shortly afterward he returned to England, and proposed to apply himself to study and philosophical inquiry; but high and important diplomatic duties awaited him. He was made a member of the privy council, and sent to France as extraordinary ambassador. His aim was to promote the alliance between France and England, and he was so far successful that he was appointed ordinary ambassador, and continued to reside at Paris. He tried, with small success, the difficult task of negotiation between Louis XIII. and his Prot. subjects. He was elevated first to be a peer of Ireland, and then 1630, five years after the accession of Charles I., to be a peer of England, with the title of Baron H. of Cherbury. When the civil war broke out, he appears to have acted with hesitation, at first siding with the parliament, and then joining the king. His hereditary seat, Montgomery Castle, was attacked and burned. He died in London.

The character of H., as depicted in his autobiography, is in the main that of a gallant adventurer, fired equally with the love of arms and of arts, at once soldier and scholar. He is the gay man of the world, always truthful, honorable, and high-spirited; yet he has thoughts above those of the world; he ponders deeply the great questions of truth and religion, and has left the result of his speculations in his two treatises, *De Veritate* and *De Religione Gentilium*. The reader will find an admirable analysis of the first and most important of these treatises in Hallam's Literary History. They are interesting only to the philosophical student, or to the inquirer into the history of religious opinion in England. H.'s position at the fountain-head of English deism gives them peculiar significance. He is far, however, from being *skeptical*, in the modern sense of the term. His speculations are those of a philosophical dogmatist rather than of a critical inquirer. His arguments are abstract and deductive, and not analytical or negative. He offers solutions, rather than starts difficulties or obtrudes negations; and in this respect H. is rightly reckoned the first of English deists, the writings of all of whom partake more or less of the same character; though it is not easy to trace any links of direct connection between him and the outburst of deistical literature in the end of the 17th and beginning of the 18th century.

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HER'BERT, GEORGE: English poet: 1593, Apr. 3—1633; b. near the town of Montgomery, Wales; fifth brother of Lord Herbert of Cherbury (q.v.). He was educated at Westminster, and was sent to Trinity College, Cambridge, about 1608. In 1615, he was elected fellow; and 1619, was promoted to the office of public orator. At the university, he made the acquaintance of Lord Bacon; and in the hope of preferment, he was induced to spend a considerable portion of his time about the court. On the death of James I., he changed his course, studied divinity, and finally took holy orders; and was made prebendary of Leighton Bromswold 1626. He married 1630; and in the same year received the rectory of Bemerton. Two years afterward at the early age of 39, he died. His principal poetical production, printed 1633, after his death, is entitled *The Temple, or Sacred Poems and Private Ejaculations*, and, though disfigured by fantastic conceits, has a quaint beauty, a pious simplicity, and in parts a sublimity of conception which give it high rank in poetry. It contains several passages of the purest pious verse which the language possesses. He wrote a prose work, *The Country Parson*, which lays down rules for the guidance of a clergyman's life, and which may be considered a pendant to *The Temple*. His life was written by Isaak Walton, and to that quaint and loving pen, in part, he owes his literary immortality.

HERBERT, her'bert, HENRY WILLIAM: author: 1807, Apr. 7—1858, May 17; b. London, England; son of the Dean of Manchester. He graduated at Oxford Univ. 1829, removed to the United States 1830, taught the classics in Newark, N. J., and New York 1831-40, published a number of novels 1837-55, started the *American Monthly Magazine*, wrote for the sporting papers and issued numerous work on American sports under the pen name *Frank Forester*; and in the last three years of his life applied himself to historical literature. His sporting works, by which he is best remembered, comprised *The Field Sports of the United States and British Provinces of North America*, 2 vols. (1848); *Fish and Fishing of the United States and British Provinces* (1849); *Complete Manual for Young Sportsmen* (1852); *American Game in its Season* (1853); and *Horse and Horsemanship in North America*, 2 vols. (1857).

HERBERT, HILARY ABNER: an American lawyer; b. in Laurensville, S. C., 1834, March 12; was educated at the universities of Alabama and Virginia; admitted to the Alabama bar; served in the Confederate army in the civil war as captain and colonel of the 8th Alabama Infantry; and was disabled at the Battle of the Wilderness. He resumed practice in Greenville after the war till 1872, when he removed to Montgomery; was a member of Congress, 1873-93; secretary of U. S. navy, 1893-97; and afterward practiced in Washington.

HERBERT, MICHAEL HENRY: an English diplomatist; b. in England. 1857, June 25; entered the diplomatic service in 1877; was charge d'affaires in

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Washington, 1888-89; secretary of the British legation at Washington, 1892-93; at The Hague, 1893-94; at Constantinople, 1894-97; at Rome, 1897-98; and at Paris, 1898-99; and was appointed British ambassador to the United States, 1902, June 4.

HERBERT, SIDNEY (Lord HERBERT OF LEA): English statesman: 1810-1861, Aug. 2; b. Richmond; son of the 11th Earl of Pembroke by his second wife. Educated at Harrow and at Oriel College, Oxford, he entered public life, and was sent to the house of commons 1832 for South Wilts, which he represented until his elevation to the peerage 1861. He began his political career as a conservative, and was sec. to the admiralty in Sir R. Peel's administration 1841-45, when he became sec.-at-war. As a member of this administration, it fell to him to oppose Mr. Cobden's motion for a select committee to inquire into the effect of the corn-laws on farmers, and afterward, to argue in support of free trade in corn. He went out of office with his party 1846. In 1852 he was again sec.-at-war, under the Aberdeen ministry, and, in consequence, the 'horrible and heart-rending sufferings' of the army before Sebastopol were laid in a great degree at his door. He was for a few weeks colonial sec. in the first administration of Lord Palmerston 1855, and sec.-at-war in his second administration 1859. Great improvements in the sanitary condition and education of the army, the amalgamation of the Indian with the royal army, and the organization of the volunteer force, signalized his army administration. He largely reformed the war-office, and was applying himself with equal zeal and intelligence to his ministerial duties, when, owing to failing health, he resigned his seat in the house of commons, and 1861 was called to the upper house, under the title Baron Herbert of Lea. But release from labor came too late, for he soon afterward died. He was heir-presumptive to the 12th Earl of Pembroke. He had great aptitude for business, winning and genial manners, great readiness and fluency in debate, and a boundless philanthropy, and was a liberal patron of the arts.

HERCULANEUM, *hēr-kū-lā'nē-ŭm*: ancient city of Italy, at the n.w. base of Mount Vesuvius, about five m. e. of Naples. Only its buried ruins remain. Considerable obscurity envelops its early history; it is supposed, however, to have been of Phœnician origin, and to have been occupied afterward by Pelasgians and Oscans. It subsequently was conquered, with all the rest of Campania, by the Samnites, and later it fell into the hands of the Romans. In A.D. 63, the city was seriously injured by a violent earthquake; and in 79 it was buried, with Pompeii and Stabies, by the memorable eruption of Vesuvius (q.v.). It now lies 70 to 120 ft. below the surface, and is filled up and covered with volcanic tufa, composed of sand and ashes, and consolidated to some extent by water, which is often thrown up in great quantities during volcanic eruptions. Above it, on the modern surface, are the two large villages Portici and Resina. In the latter, 1706, on the occasion of deepening a well, fragments of mosaics were first brought up: but

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little was done in the way of systematic excavation till 1738, when explorations were commenced under royal authority. It was then discovered that the building near the bottom of the well, from which the first relics were obtained, was the theatre. This building was forthwith explored and cleared, and several statutes in bronze and marble were extracted from it. Excavations were limited in extent, not only by the hardness of the tufa, but from the fear of undermining the dwellings on the surface. Hence visitors can see only a very small portion of this entombed city. The chief edifice shown is the theatre, which had been very large, and was built but a short time before the fatal eruption. It has 18 rows of stone seats, and could accommodate 8000 persons. A basilica, two small temples, and a villa, also have been discovered; and from these buildings, many beautiful statues and remarkable paintings have been obtained. Among the art-relics of H., which far exceed in value and interest those found at Pompeii, are the statues of Æschines, Agrippina, the Sleeping Faun, the Six Actresses, Mercury, the group of the Satyr and the Goat, the busts of Plato, Scipio, Africanus, Augustus, Seneca, Demosthenes, etc. These treasures, together with such vases and domestic implements as have been found, are in the Museum at Naples. Latterly, the portion of H. toward the sea, which had been covered only by loose ashes, has been laid open, and ancient buildings may now be seen there to advantage as well as at Pompeii. See PAPHRI.

HERCULEAN, adj. *hēr-kū'lē-ăn* [Gr. *Herāk'ēs*; L. *Hercūlēs*]: very great; difficult or dangerous; of extraordinary strength or power.

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HERCULES, *hēr'kū-lēz* [Gr. *Herakles*], called likewise **ALCIDES**, *al-sī'dēz*, after his grandfather Alcæus: mythical hero of Hellas. He was son of Zeus and Alcmene, and the most celebrated hero of the Greek legends, the ideal of human perfection, as conceived in the heroic ages; i.e., the greatest physical strength, connected with every high quality of mind and character which these ages recognized. He had a bitter enemy in Hera, who, knowing that the child who should be born that day was fated to rule over all the descendants of Perseus, contrived to prolong the travail of Alcmene, who was the daughter of Alcæus, son of Perseus, and hasten that of the wife of Sthenelus, another son of Perseus, who, after a pregnancy of seven months, gave birth to a son, named Eurystheus. Eurystheus thus, by decree of Fate, became chief of the Perseidæ. Pindar and subsequent writers relate, that, while yet in his cradle, H. showed his divine origin by strangling two serpents sent by Hera to destroy him. By Amphitryon's care, he was instructed in all arts by the first masters. Amphitryon now sent him into the country, where he tended the flocks till he was 18 years of age. During this period as the Sophist Prodikos relates in his poem, H., meeting the goddesses of Pleasure and Virtue at the crossways, chose the later to be the constant companion of his life.

His first exploit was the slaying of a lion, which haunted Mount Cithæron, and ravaged the dominions of King Thespius. H. was kindly received by the king, and at length succeeded in destroying the lion. On his return to his native city of Thebes, he not only freed it from the disgrace of having to pay tribute to the Orchomenians, but compelled them to pay double the tribute which they had formerly received. In return for this service, Creon, King of Thebes, gave him his daughter Megara in marriage. At this time Eurystheus summoned H. to appear before him, and ordered him to perform the labors which, by priority of birth, he was empowered to impose on him. H., unwilling to obey, went to Delphi to consult the oracle, and was told that he must perform ten labors imposed by Eurystheus, after which he should attain to immortality. This reply plunged H. into the deepest melancholy, which Hera increased to madness, so that he killed his own children by Megara. When he recovered his senses, he returned, submitted to Eurystheus, and addressed himself to the labors imposed.—The first labor was to destroy the lion which haunted the forests of Nemea and Cleonæ, and could not be wounded by the arrows of a mortal. H. boldly attacked him with his club, but in vain; and he was finally obliged to strangle him with his hands. From this time, he wore the lion's skin as armor.—The second was to destroy the Lernæan hydra, which he accomplished with the assistance of his friend Iolaus; but because H. obtained assistance in this labor, Eurystheus refused to count it.—His third was to catch the hind of Diana, famous for its swiftness, its golden horns, and brazen feet.—The fourth was to bring alive to Eurystheus a wild boar, which ravaged the neighborhood

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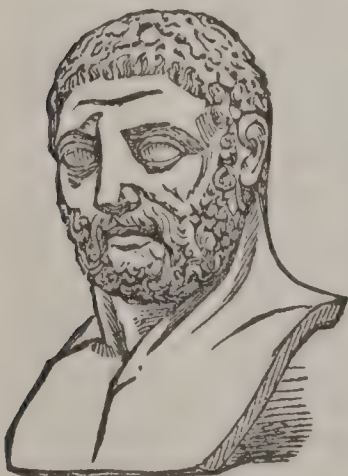
of Erymanthus.—The fifth was to cleanse the stables of Augeas, King of Elis, where 3,000 oxen had been confined for many years, which he accomplished in one day, by turning the rivers Alpheus and Peneus through the stables. But as H. had gone to Augeas, and offered to perform this service on payment of a tenth of the cattle, and concealed the fact that he had been commanded to perform it by Eurystheus, the latter, hearing of this, judged that it must not be counted as one of the labors.—His sixth was to destroy the carnivorous birds, with brazen wings, beaks, and claws, which ravaged the country near the lake Stymphalis, in Arcadia.—The seventh was to bring alive to Peloponnesus a bull, remarkable for his beauty and strength, which Poseidon, at the prayer of Minos, had given to Minos, King of Crete, in order that he might sacrifice it, which Minos afterward refusing to do, Poseidon made the bull mad, so that it laid waste the island. H. brought the bull on his shoulders to Eurystheus, who set it at liberty. It appears again as the Marathonian bull in the story of Theseus.—The eighth labor was to obtain the mares of Diomedes, King of the Bistones in Thrace, which fed on human flesh.—The ninth was to bring the girdle of Hippolyta, Queen of the Amazons.—The tenth labor was to kill the monster Geryon, and bring his herds to Argos. These were all the labors which were originally imposed on H., but as Eurystheus declared the second and fifth unlawfully performed, H. was ordered to perform two more.—The eleventh was to obtain the golden apples from the garden of the Hesperides. Atlas, who knew where to find the apples, brought them to H., who meanwhile supported the vault of heaven; but according to others, H. went himself and stole the apples, after slaying the dragon who guarded them.—The last and most dangerous labor was to bring from the infernal regions the three-headed dog Cerberus. Pluto promised him Cerberus on condition that he should use no weapons, but only force. When H. had brought the monster to Eurystheus, the latter, pale with fright, commanded him to be removed. H. set him at liberty, whereupon Cerberus immediately sank into the earth. H. was now free from his state of servitude.

To these well-known 'twelve labors,' must be added many other achievements, such as his battles with the centaurs and with the giants; his participation in the expedition of the Argonauts; the liberation of Prometheus and Theseus, etc. After accomplishing all these exploits, H., while in a state of mental aberration, murdered his faithful friend Iphitus; he was afterward purified from the murder; but was compelled to sell himself for three years into slavery. When his period of slavery had expired, he returned to Peloponnesus, and some time afterward became a suitor for the hand of Dejanira, daughter of Ceneus, King of Calydon, whom he married, after having overcome his rival Achelous. With her he now repaired to Trachinia. Having arrived at the river Evenus, he encountered the centaur Nessus. H. passed thorough on foot; but Nessus, under pretense of carrying Dejanira over, attempted to offer

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her violence; whereupon H. slew him with an arrow dipped in the poison of the Lernæan hydra. Nessus, before expiring, instructed Dejanira how to prepare a love-potion for Hercules. The hero now made war against Eurytos (king of Oechalia, who had defrauded him), slew him and his sons, and carried off his daughter Iole. Thence he went to Kenæon in Eubœa, and erected an altar to Zeus Kenæos, in order, to celebrate the rite with due solemnity he sent Lichas to Trachis for a white garment. Dejanira, being jealous of Iole, anointed the robe with the philter that she had received from Nessus. H. put it on, and immediately the poison penetrated his bones. Maddened by the terrible pain, he seized Lichas by the feet, and flung him into the sea. He tore off the dress, but it stuck to his flesh, which was thus torn from his bones. In this condition, H. was conveyed by sea to Trachinia; and Dejanira being informed of what had occurred, destroyed herself. H. himself repaired to Mount Cœtna, where he erected a funeral pile, and ascending it, commanded that it should be set on fire. The burning fire was suddenly surrounded by a dark cloud, in which, amid thunder and lightning, H. was carried up to heaven. There he became reconciled to Hera, and married Hebe.

According to most mythologists, there were several heroes of the name of Hercules. Among these are an Indian, an Egyptian, a Tyrian or Phœnician, and a Theban Hercules. The last is the most celebrated, and to him the actions of the others have possibly been attributed. Others, who would explain the story of H. symbolically, assert that it conceals an astronomical idea; while others discover in this myth the history of the early development of Greece. On the astronomical hypothesis, the twelve labors of H. are simply the course of the sun through the 12 signs of the zodiac, which the plastic poetry of the Greeks has converted into a legend.



Head of Hercules.
(British Museum.)

According to Max Müller, H. was the Sun-god, and the legend of his death symbolizes the sunset: 'In his last journey H. proceeds from east to west. He proceeds from the Kenæan promontory to Trachis, and then to Mount Cœtna, where his pile is raised. The coat which Dejanira sends to the solar hero is an expression frequently used in other mythologies, it is the clouds which rise from the waters, and like dark raiment surround the sun. H. tries to tear it off, i.e., his fierce splendor breaks through the thickening gloom, but fiery mists embrace him, and are mingled with the parting rays of the

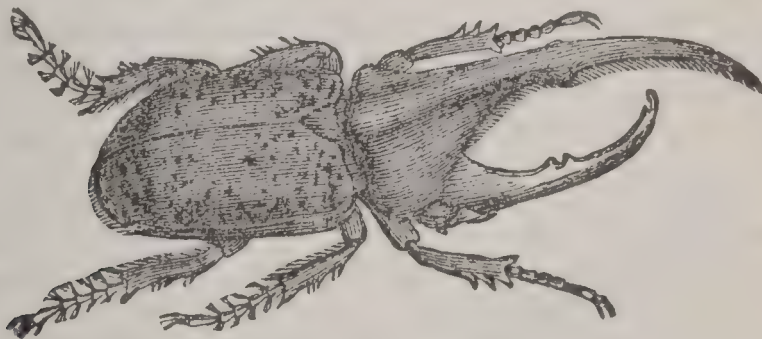
sun, and the dying hero is seen through the scattered clouds of the sky tearing his own body to pieces, till at last it is consumed in a general conflagration.' *Comparative Mythology, Oxford Essays, 1856.*

HERCULES—HERCYNIAN FOREST.

Festivals were celebrated in honor of H., at which his exploits were sung. In this manner arose the *Heracleia*, long poems celebrating the life and actions of Hercules. H. is represented in plastic art as the ideal of a hero. Strength is the characteristic idea, developed by the sculptors Myron and Lysippus in a form not to be surpassed. A complete series of representations of the 12 labors may be seen in the vases of Volce. The conflict with the giants is frequently found on vases of the oldest style; the one on the casket of Cypselos is particularly worthy of notice. H.'s figure is generally youthful.

HERCULES, PILLARS OF: the name given by the ancients to the two rocks forming the entrance to the Mediterranean at the Strait of Gibraltar. Their erection was ascribed by the Greeks to Hercules, on the occasion of his journey to the kingdom of Geryon. According to one version of the story, they had previously been united, but Hercules tore them asunder, to admit the flow of the ocean into the Mediterranean; another version represents him as causing them to unite temporarily to form a bridge. The pillars are not mentioned in Homer, though he speaks of Ulysses' passage out of the Mediterranean into the ocean and back, showing an apparent knowledge of the existence of the strait. The first author who mentions them is Pindar, who places them at Gades (Cadiz), and his opinion had many followers in later times. The most general opinion, however, identified them with Calpe (now the Rock of Gibraltar) and Abyla (now Ceuta), in Africa. The ancients supposed these rocky capes to be the western limits of the world.

HERCULES BEE'TLE (*Scarabæus Hercules*, or *Dynastes Hercules*): coleopterous insect of family *Lamellicornes*, tribe *Scarabæides*, remarkable not only for great size—it being



Hercules Beetle (*Dynastes Hercules*).

five inches long—but for the singular appearance of the male; an enormous horn projecting from the head, and being opposed by a similar but smaller projection of the thorax, the whole resembling a pair of great but somewhat unequal pincers, of which the body of the insect is the handle. It is a native of Brazil.

HERCYNIAN FOREST, *hēr-sin'ī-an fōr'ēst* [Lat. *Hercynia silva*; Gr. *Herkynia hylē*, or *Herkynion oros*]: general designation of the entire wooded mountain-range of Middle Germany, from the Rhine to the Carpathian Mountains. Different ancient writers, however, apply the name some-

HERD—HERDER.

times to one part, sometimes to another of the range. Aristotle makes the Ister (or Danube) take its rise in it. Cæsar, who estimates it at 9 days' journey in breadth, and 60 in length, comprehends under this name all the mountain-ranges in Germany n. of the Danube; while some of them identify it with the Bohemian Forest, and others with the Thuringian Forest. Modern geographers apply the term, mostly in a very arbitrary manner.

HERD, n. *hërd* [Icel. *hirda*, to keep, to guard: Ger. *hürde*, a hurdle or wattled fence: Dan. *hyrde*; Ger. *herde*, a herd: F. *harde*, a herd of deer]: a collection or assemblage, as cattle or beasts; the rabble; in *Scot.*, one employed to attend cattle: V. to unite or associate, as beasts; to form into a herd. HERD'ING, imp. HERD'ED, pp. HERDS'MAN, n. one employed in tending herds of cattle. HERD-GROOM, n. in *OE.*, a keeper of herds.

HERDER, *hër'dër*, JOHANN GOTTFRIED VON: 1744–1803, Dec. 18; b. Mohrunge, near Königsberg, East Prussia: German writer. He studied philosophy at Königsberg under Kant, for whom he conceived an enthusiastic admiration, though subsequently he became one of his most resolute opponents. There also, he made the acquaintance of Hamann (q.v.), who first introduced him to the oriental languages and literatures, and made him appreciate the poetic beauty of the primitive civilizations. In 1764, having entered the clerical profession, he was appointed assistant prof. and preacher at the Cathedral School of Riga, where his sermons were greatly admired. Here he published his first works, *Fragmente über die neuere Deutsche Literatur* (Fragments on the Recent German Literature, 1767), in which, with fiery vehemence, he attacked the wretched puerilities and errors of the national literature of the day, and the *Kritische Wälder* (lit. Critical Forests, 1769), formerly, though not now, of great theological importance. These two works contain the germs of all that is peculiar and characteristic in H.'s thinking. During a temporary residence at Strasburg Goethe made his acquaintance. The latter was five years younger than H., and, as yet, nameless in literature; while H., by his *Fragments*, was kindling with new fire the soul of Germany. Goethe almost worshipped him; he tells us (in his Autobiography) that the very handwriting of H. exercised 'a magical influence' (*eine magische Gewalt*) over him. In 1775, on the recommendation of Goethe, he was invited to Weimar by the grand-duke, and appointed court-preacher and consistorial councilor. Here he resided until his death. H.'s writings are very numerous, amounting to 60 vols. (Stuttg. 1827–30). They may be divided into three classes: 1. Those relating to religion and theology; 2. Those relating to literature and art; 3. Those relating to philosophy and history. As a theologian, his most important work is his *Geist der Hebr. Poesie* (Spirit of Hebrew Poetry, Dess. 1782; later edition, Leip. 1825; translated into English by Dr. James Marsh, 2 vols. Burlington 1833). As a philosopher, he has left a fund of valuable observation on nature and mankind. His

HERD'S GRASS—HERE.

philosophical masterpiece is his unfinished *Ideen zur Philosophie der Geschichte der Menschheit* (Ideas toward a Philosophy of the History of Mankind, 4 vols. Riga 1784–91; 4th ed., with Luden's Introduction, 2 vols. Leip. 1841; translated into English by T. Churchill under the title, *Outlines of a Philosophy of the History of Man*). In this work, all the rays of his genius converge. His aim is to represent the entire history of the race as a series of events pointing to a higher destiny than has yet been revealed. His love and reverence for humanity are intense, pure, passionate. An ideal humanity, it might almost be said, is his divinity, in whose service he labors with restless zeal. That enthusiasm, however, which made H. so effective as a mover of men's minds, had its damaging accompaniment in a deficiency of artistic excellence; his works are not remarkable for perfection of style or method. Among his works were *Gedichte*, *Volkslieder*, and the *Cid* (much admired by the Spaniards). In recent years there is a decided revival of interest in H. and his writings. See H.'s *Lebenbild*, by his son (1846–7); works by Ziller, Thilo, Drobisch; Hildebrand's admirable essay in his work, *German Thought*; and Nevinson's *Sketch of H. and his Times* (1884).

HERD'S GRASS (*Phleum pratense*), or TIMOTHY: one of the most valuable varieties of grass. In Penn. and the South Redtop (*Agrostis vulgaris*) is called Herd's Grass. H. G. is said to be a native of Great Britain, where it is called Cat's-tail grass and is extensively cultivated. There are several traditions regarding its names. The most probable are that it was named from a farmer named Herd who introduced its culture in this country, and that it was called Timothy from Timothy Hanson, who sent its seed from New York to the South about 1750.

On account of its bulbous root H. G. does not stand severe drought on light soils as well as some other grasses, and is not adapted to very close pasturage. But in rich soils it roots deeply and maintains itself many years. It is not entirely successful in the extreme South. At the North and West it has no superior for a hay crop. It is especially valuable for horses but, if cut early, is excellent for cows and sheep; yields heavy crops and contains a large proportion of nutritive matter. Seed may be sown in early autumn or in spring. It is frequently sown with grain but separate seeding is preferable. The land should be made rich, and the surface soil finely pulverized. From 12 to 20 quarts of seed per acre are sown. Heavy seeding gives the best quality of hay. Other grasses are usually, and profitably, sown with H. G. both for hay and for pasturage. For hay, it should be cut when the stem, near the ground, begins to turn yellow. If it stands too long the stem becomes woody and indigestible, and the nitrogenous matter is stored in the seed. On rich land 15 to 30 bushels of seed, weighing 44 lbs. per bushel, may be obtained per acre.

HERE, ad. *hēr* [Ger. and Dut. *hier*; Icel. *her*; Sw. *här*]: in this place; in the present state or life. HERE AND

HEREDIPETY—HEREDITARY PRIVILEGES.

THERE, in a dispersed manner; thinly. NEITHER HERE NOR THERE, neither in this place nor in that; of no importance. HERE, or HERE'S, a word used as an introduction to the drinking of a health, and to call attention to the fact that such is about to be done, as well as to the person who is about to do it, as *here's to you*—that is, 'it is to you,' or 'it is in your honor;' a word used in calling to, or making an offer, as '*here's my hand,*' '*come here,*' '*here goes.*' HEREABOUT, ad., or HEREABOUTS, ad. about this place. HEREAFTER, ad. in time to come: N. a future state. HEREAT', ad. at this. HEREBY', ad. by this. HEREIN, ad. in this. HEREOF', ad. of or from this. HEREON', ad. on this. HERETO', ad. -tō', to this; add to this. HERETOFORE', ad. -tō-fōr', hitherto; formerly. HEREUNTO', ad. -ūn-tō', to this. HEREUPON, ad. -ūp-ōn', on this. HERewith', ad. with this.

HEREDIPETY, n. *hēr'è-dīp'ē-tī* [L. *harēs*, an heir, *harēdis*, of an heir; *pētō*, I seek]: legacy-hunting.

HEREDITABLE, a. *hēr'èd'ī-tā bl* [L. *hereditas*, heirship, an inheritance—from *hērēs*, an heir; F. *hérédité*, heirship]: that may be inherited. HEREDITABLY, ad. -blī. HEREDITAMENT, n. *hēr'è-dīt a-mēnt*, any species of property that may be inherited; sometimes divided into corporeal hereditament (houses and lands), and incorporeal (various rights). HEREDITARY, a. *hēr'èd'ī-tēr-ī*, that has descended from an ancestor; that may descend from an ancestor; that may be transmitted from parent to offspring. HEREDITARY RIGHT, strictly, the right of succession as an heir-at-law; its foundation is nothing but convenience, the principle being, that if a man does not by will appoint his own heir, the law will do it for him; and the law, in doing this, proceeds according to certain degrees of relationship. Hereditary right thus is not divine, or superior to that which results from the radical right of ownership: it is a secondary and substitutional right, the principal and primary right being that by which the owner of the land is entitled to say who shall at his death enjoy that land. HEREDITARILY, ad. -ī-lī. HEREDITY, n. -ī-tī, or HEREDITARINESS, or HEREDITARY TRANSMISSION. scientific name for the law 'that each plant or animal produces others of like kind with itself': see HEREDITY.

HEREDITARY PRIVILEGES AND POSSESSIONS: rights and possessions transmitted from ancestors. The question of the admissibility of these has been much agitated with regard to three points, especially in recent times. The first is hereditary monarchy. The 'divine' right of kings is now little urged, being felt incompatible with modern notions of the political relations of society; and the defense of the hereditary transmission of the supreme power of the state is rested rather on the ground of political expediency and necessity. The animosities and disturbances of public affairs that attend the ever-recurring election of a head of the state are avoided, it is argued, by making power hereditary in a particular family, and by a determinate law of succession; while the dangers and dis-

HEREDITARY PRIVILEGES AND POSSESSIONS.

advantages which might arise from an authority depending on the chance of birth, are capable of being neutralized by institutions which prevent the monarch from doing harm, even if there were not every reason to hope that self-interest will lead him to use the power which is the birthright of his family, for the permanent honor and advantage of that family, and, therefore, of the community with which it is indissolubly bound up.

Another and perhaps more difficult aspect of the question is with regard to hereditary classes, dignities, and offices in the state beside the hereditary monarch. One thing is now agreed upon in all countries of an advanced civilization, that the transmission in individual families of dignities, rights, and offices, involving essential parts of government—such as the supreme dispensation of justice, and other attributes of sovereignty—is inconsistent with the very idea of a state. The splitting up of Germany into a maze of petty sovereignties arising out of fiefs of the empire become hereditary, is a signal historic instance of the dangers of this principle. A hereditary nobility with such rights is no longer considered defensible. It is another question whether, as a political institution, a class with certain hereditary privileges may not be advantageous or even necessary as an element of stability, and as affording a source of trained statesmanship. Society has a longer life than the individuals that compose it, and should have further-stretching views—‘looking before and after;’ and it is argued that chiefly in the great historical families of a nation, such extended views grow up and are cherished—families whose traditions form part of the national history, and which naturally identify their future with the national prosperity and dignity. It is claimed that besides their traditions and well-developed national instincts, the individual members of such families have other advantages as political and social leaders. Their usually good education, and their well-secured possessions which, in addition to a high sense of honor, raise them above having recourse to petty shifts and jobs, make them valuable as examples and as administrators in a commonwealth which aims at dignity and stability. Carried to an extreme length, as in France prior to the great revolution, the hereditary privileges of the nobility are a source of social discontent and disorder; but limited as in the United Kingdom, hereditary privileges and dignities are in that country considered in no way incompatible with the utmost social expansion, and are in reality so popular as to be admittedly a happy feature in the structure of society. It is further claimed, that as great families with privileges and titles are from time to time dying out, while others, through distinguished public services, are raised to the rank of nobility, that degree of infusion of new blood is kept up which gives vigor to the system, and at least prevents the British aristocracy from degenerating into an effete or antiquated caste.

In the United States, the aristocratic as well as the monarchical view is discarded; and the republican theory is so administered as to prevent any official dignity or function

HEREDITY.

from being claimed by any person as a hereditary right or privilege.—As regards the economic view of hereditary right to private property, see J. S. Mill's *Political Economy*.

HEREDITY: tendency in an animal or plant to resemble its parents in all essential characteristics, bodily or mental. The tendency in the offspring is to be of the same species, and even of the same variety as the parents, though always with minute differences. The influence of parents on the qualities of their offspring is universally admitted, but the relative amount of influence from each parent is still an open question.

The general structure of the body, the height, the degree of development of the bones and muscles, the tendency to obesity or leanness, etc., seem to depend as frequently on one parent as on the other, in the case of man; but in many animals, as the dog, horse, etc., the father most frequently determines the general form and the size of the body.

The color and complexion of the offspring follow no definite rule. Sometimes the colors of the two parents appear undiluted in the offspring, as in the case of a piebald colt, resulting from the union of a bay stallion and a white mare; in other cases an intermediate tint appears in the young. In the offspring resulting from the union of individuals of the dark and white human races, this intermediate tint is developed; but it is believed that the color of the father usually predominates over that of the mother.

A very curious department of this subject is the transmission to the offspring of special marks or deformities exhibited by one of the parents or more remote ancestors, and not common to the species. Nævus (or mother's marks), moles, harelip, growths of hair in unusual places, an unusual number of fingers or toes, and special malformations of the heart and of other organs, have been frequently traced to hereditary influence. These peculiarities have a tendency to show themselves in alternate generations, or even at greater intervals (see **ATAVISM**). Burdach, Blumenbach, and other eminent physiologists, have held the doctrine, that parents (whether dogs or men) who have suffered accidental or intentional mutilation of certain parts (e.g., the tail, fingers, etc.), often produce offspring which inherit these deficiencies; e.g., dogs with cropped tails often produce pups with cropped tails. If the facts are such (which possibly may be doubtful), they are due probably to an impression on the mother's mind rather than to an hereditary tendency. The immemorial practice of the Chinese in stunting the feet of their women, has not produced a natural variety with that peculiarity.

Morell, in *Introduction to Mental Philosophy*, observes that there are latent powers or tendencies which have been inherited, and which often remain unknown until brought out by peculiar circumstances. He gives the familiar example of the pointer. The habit of pointing at game is originally an acquired one; but so strongly does this habit become seated in the race, that the very first time the

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young pointer is taken into the field, he will stand and mark it, thus developing a purely hereditary instinct. 'Exactly in the same way,' he adds, 'we find in man peculiarities of mind, temper, thought, habit, volition, etc., appearing and reappearing in families and races. Lord Brougham found some of his grandfather's writing exactly resembling his own [which is very peculiar], though the grandfather had died before he was born, and his father's was quite different.' It is alleged that the children of skilled artisans are, as a rule, more apt at petty manipulations than the children of ordinary laborers, and that hence the population of certain towns—Birmingham, for example—has a great advantage over that of other towns in point of manufacturing industry.

It is well known that longevity or the reverse, a tendency to great fruitfulness or to sterility, peculiarities in the degree of delicacy in the external senses, and a special tendency to certain diseases—as gout, pulmonary consumption, cancer, etc.—are frequently transmitted in hereditary descent from one or other parent to the offspring. The predisposition to any special disease may be transmitted by either parent; but where both parents have been affected, the offspring are especially liable to it. Deformities and diseases, also, engendered by circumstances to which the exposure is lifelong, or affecting successive generations, are more certainly and conspicuously hereditary.

Hereditary Tendency to Mental Disease.—As the mental constitution in general is eminently propagable, the hereditary tendency in mental disease is more familiar and better demonstrated than in other forms of morbid action. One observer attributes six sevenths of the cases of insanity to this cause. In France, and among the affluent classes, one case in every three; among the peasants, one in every ten, is found to occur in families predisposed to alienation. In Italy, the proportion is nearly the same. When stating that derangement is traced to transmitted taint, the expression is given to the complex proposition, that individuals who have inherited an unhealthy cerebral organization, or bodily qualities, such as anæmia, incompatible with sound mental action, fall victims more frequently and inevitably to insanity than those physically and mentally robust would do. Experience shows that as particular forms of physical degeneration such as rickets, consumption, in like manner particular species of alienation, are propagated in families; that the suicidal impulse appears in one, while the uncontrollable and insatiable desire for stimulants is the heritage of a third. There are certain laws by which this proclivity seems to operate. Not merely are there more females than males actually insane, but there are more hereditarily disposed to be insane. In connection with this it must be observed that women are more exposed by constitution to the exciting causes of insanity than males, and that as infants they more readily acquire the mental tone of the mother. But, moreover, the insanity of the mother is more frequently transmitted than that of the father. French authorities record that of 467 cases

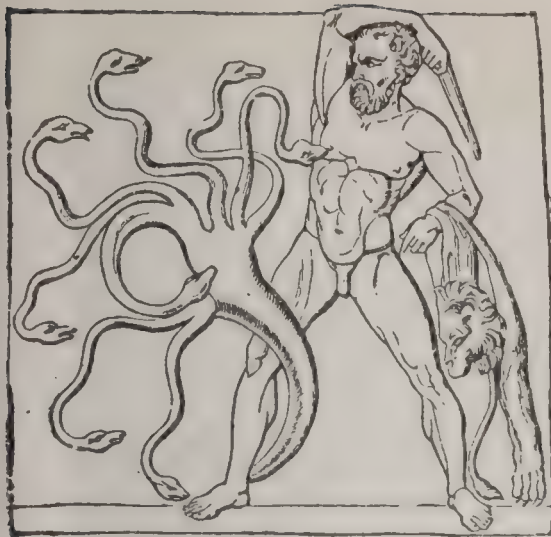
HEREFORD—HEREFORDSHIRE.

of mental affections, 279 were traceable to the mother: an English physician similarly records 76 out of 133. Where the taint exists on the side of the mother, a great number of children, and a greater number of daughters, are born of unsound mind. But this disposition to disease of the nervous matter is manifested in the same family by different members, in various forms—as epilepsy, mania, eccentricity, or delusions. Even the last are exhibited in successive generations. Oxford (who shot at the queen), his father, and grandfather, all believed themselves to be St. Paul.—Holland, *Medical Notes*, etc., Lucas, *L'Hérédité Naturelle*; and Galton's *Hereditary Genius*.

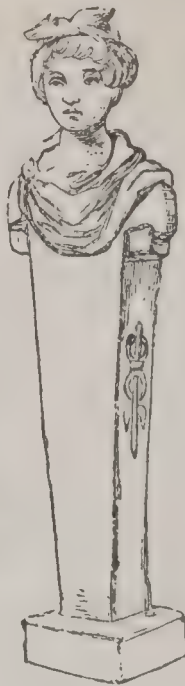
HEREFORD, *hēr'è-fèrd*: city, parliamentary and municipal borough, cap. of the county of Hereford (Herefordshire), in the fertile and highly cultivated valley of the Wye, 134 m. w.n.w. of London. The principal building is the cathedral, a noble edifice, which, after having been substantially restored, was reopened 1863. St. James's church, built 1868, is an ornament to the city. A very interesting old map of the world, said to date from the 13th c., and other geographical works, are deposited in the chapter-house and library. Besides many other public buildings, H. contains numerous benevolent and educational institutions, among the latter of which are several important free schools. Its manufactures are inconsiderable; gloves, hats, and flannel are the chief. Of its 5 annual fairs, that in Oct. is perhaps the largest in the county. H. returns one member to parliament. Pop. (1871) 18,347; (1881) 19,822; (1891) 20,267; (1901) 21,382.

HEREFORDSHIRE, *hēr'è-fèrd-shēr*: inland county in w. England. bounded w. by S. Wales, e. by Worcester and Gloucester; 534,823 acres. Pop. (1881) 121,042; (1901) 114,150. The surface of country hilly, with occasional valleys opening into wide-spread plains. Among the chief hill-ranges, are the Black Mountains on the w., and the Malvern Hills on the e. border of the county. The whole of H. is in the basin of the Severn, and the general direction of the streams is s.e. toward that river. The Wye, with its affluents the Lugg, the Arrow, and the Teme, are the principal rivers. The climate of H. varies with the elevation and the exposure, but, as attested by the general longevity of the inhabitants, is on the whole exceedingly healthful. The soil is for the most part a deep, heavy, red loam, which produces good crops of grain, chiefly wheat, and is highly favorable to the growth of trees. Oaks and apple-trees abound, orchards are numerous, and cider is made in great quantity. Sheep and cattle of excellent breeds are extensively reared, and in the n.w. of the county a useful breed of horses is produced. Agriculture is the chief employment of the inhabitants.

H., or at least the greater part of it, formed a portion of the territory of the ancient Silures, and was conquered by the Romans about A.D. 73. During the so-called Heptarchy, it was included in Mercia. From its position on the Welsh border—a portion of the county being included in the de-



Hercules slaying the Hydra.—From Sculpture at Florence.



Hermes or Mercury.



Hermes.
Another specimen.



Hessian Fly (*Cecidomyia destructor*): *a*, Male (natural size); *b*, Male (magnified); *c*, Pupæ fixed on the joint of the wheat-stalk.



Hexandria.—*Scilla autumnalis*.



Herring-bone Masonry at Colchester Castle.

HERENCIA—HERESY.

batable land called the 'Marches'—H. was long the scene of frequent contests.

HERENCIA, *ā-rĕn'thē-ā*: town of Spain, province of Ciudad Real, about 40 m. n.e. of the city of Ciudad Real. It carries on manufactures of soap, and has a large weekly market. Pop. 6,400.

HEREROLAND: see DAMARALAND: OVAMPOS—OVAMPOLAND.

HERESY, n. *hĕr'ĕ-sĭ* [F. *hérésie*—from Gr. *hairĕsis*, L. *hæresis*, a set of principles, heresy—from Gr. *hairĕō*, I take, I choose]: untenable or unsound opinion or doctrine; religious opinion opposed to Scripture, as interpreted by the authorized doctrinal standard of any particular church. HER'ETIC, n. *-tĭk* [Gr. *hairĕtikōs*, heretical]: one who holds opinions contrary to those generally received or taught. HERETICAL, a. *hĕ-rĕt'ĭ-kāl*, contrary to the true or established faith; erroneous. HERET'ICALLY, ad. *-lĭ*. HERESIARCH, n. *hĕr'ĭ-sĭ-ārĭk* [Gr. *archos*, chief]: a leader in heresy; the founder of a sect of heretics. HER'ESIA'R'CHY, n. *-ār'kĭ*, chief heresy. HER'ESIOG'RAPHER, n. *-ōg'rā-fĕr*, one who writes on heresies. HER'ESIOG'RAPHY, n. *-ōg'rā-fĭ* [Gr. *graphō*, I write]: a treatise on heresies. HERESIOLOGIST, n. *-ōl'o-jĭst*, one who applies himself to the study of the history of heresy. HERESIOLOGY, n. *-jĭ*, comprehensive history of heresy.—SYN. of 'heresy': heterodoxy; schism; sectarianism.

HER'ESY: term applied to religious belief, denoting the act of choosing for one's self, and maintaining opinions contrary to the authorized teaching of the religious community; denoting also the heterodox opinions thus adopted, and the party which may have adopted them. In Acts v. 17; xv. 5; xxiv. 5; xxviii. 22, the word seems to be used of a sect or party, abstracting from the consideration of its character whether good or bad; but in the Epistles and in the early Christian writers it is almost invariably used in a bad sense, which is the sense uniformly accepted in all subsequent theological literature. The notion of H., as understood by theological writers, involves two ideas: first, the deliberate and voluntary rejection of some doctrine proposed by the supreme authority established in any church as necessary to be believed; secondly, a contumacious persistence in such rejection, with the knowledge that the belief of the doctrine is required of all the members of that particular religious community. Rom. Cath. writers, regarding the authority of their own church as supreme and final, apply the name H. to any formal denial of a doctrine proposed by the Rom. Cath. Church as necessary to be believed. Protestant writers seldom use the word, except in relation to what each sect regards as the essentials of Christian faith. Beyond this point, indeed, the idea of H. has no proper place in the dogmatical system of the Prot. sects, especially in reference to other communions than their own. In the Rom. Cath. Church, the supreme authority may be either the decree of a general council approved by the pope, or a dogmatical decree of the

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pope himself, expressly or tacitly received by the bishops of the various churches; and in general the charge of H. is incurred in any church by the rejection of a doctrine which in that church is held to constitute an essential and integral portion of the Christian faith. Apostasy is the complete abandonment of the whole Christian doctrine, and the renunciation of the Christian profession. If the intellectual error be accompanied by full deliberation, and by full knowledge of the motives of belief, the H. is called *formal*; should it arise from ignorance or imperfect knowledge, it is styled *material*; and the H. is held to be imputable, or the contrary, according as this ignorance is vincible or invincible.

Even in apostolic times, heresies had arisen in the church; and before the council of Nice, the catalogue of sects had already swelled to considerable dimensions. Without attempting any enumeration of these heresies, it may be said in general that the sects of the early centuries are all reducible to two classes: (1) Those which attempted to associate the Christian doctrine with Judaism; (2) Those which ingrafted Christianity upon the Gentile religions or the Gentile philosophies. And this latter class naturally subdivides itself into (1) The sects which were tinged with the errors of the oriental philosophy; (2) Those which drew their errors from the Grecian schools. Of all these we find traces, more or less distinctly marked, in the sects of later ages.

From the very date of the establishment of Christianity in the Roman empire, H. appears to have been regarded as a crime cognizable by the civil law; and Constantine enacted several severe laws for its repression, which were continued and extended by his successors, and were collected into a single title, *De Hæreticis*, in the Justinian code. The penalties of H. ordained by these enactments are very severe, extending to corporal punishment, and even to death; and they all proceed on the distinct assumption that a crime against religion is a crime against the state. These enactments of the Roman law were embodied in the various codes of the European kingdoms; and in considering the history of the middle ages, it is necessary to recollect that the principle above referred to, as to the social bearing of the crime of H. and of other crimes against religion, pervades the whole system of mediæval jurisprudence. It is further to be remembered, that the principles of many of the mediæval sects were anti-social and communistical, as well as opposed to the doctrines of the church; and that their leaders, in many instances, by adopting violent and revolutionary means for the propagation of their doctrines, drew upon themselves the punishment of anarchy and rebellion, as well as of heterodoxy in religion. Still, with even these allowances, Rom. Cath. historians themselves admit that the mediæval procedures against H. were in many instances excessive, as were, indeed, also the processes and penalties of the criminal code.

In English Law (2 Hen. IV. c. 15), H. consisted in holding opinions contrary to what was known as Catholic faith

and the determination of Holy Church; and by common law the offender was to be tried in the provincial synod by the archbishop and his council; and, after conviction, was to be given up to the king to be dealt with at his pleasure, the king being competent to issue a writ *de hæretico comburendo*; but the statute above referred to empowered the diocesan to take cognizance of H., and on conviction to hand over the criminal directly, and without waiting for the king's writ, to the sheriff-major or other competent officer. This statute continued practically in force, with certain modifications, till the 29 Charles II. c. 9, since which time H. is left entirely to the cognizance of the ecclesiastical courts; but, as there is no statute defining in what H. consists, and as, moreover, much of the jurisdiction of the ecclesiastical courts has been withdrawn by the various toleration acts; and, above all, as the effect of various recent decisions has been to widen almost indefinitely the construction of the doctrinal formularies of the English Church, it may now be said that the jurisdiction of these courts in matters of H. is practically limited to preventing ministers of the Established Church from preaching in opposition to the doctrine and the articles of the establishment from which they derive their emoluments, and that, even in determining what is to be considered contrary to the articles, a large toleration has been juridically established. See the case of Dr. Rowland Williams and other trials in connection with the *Essays and Reviews*, as well as more recent cases.

It is evident that the term H. has a vague and varying meaning, according to the period, the place, and the circumstances in which it is used. It does not necessarily involve rejection of the common Christianity, especially in modern days; being applied sometimes in pious panic, or in an excess of doctrinal zeal. The heresies that invaded the early church seem, however, in most cases to have been properly so called.

Beside the heresies in the Christian Church, there are numerous sects and heresies among Mohammedans and Buddhists.

For the history and literature of heretical sects, consult the very numerous articles in this work on the various bodies of heretics, as MANICHÆANS: Gnostics: ALBIGENSES: ETC.; the standard ecclesiastical historians; also Stockmann's *Lexicon Hæresium* (1719); De Cæsari's *Hæresiologia* (1736); Arnold's *Ketzerhistorie* (1699); and like works by Walch, Fritz, and Hilger.

HERFORD, *hër'fört*: town of Prussia, province of Westphalia, close to the frontier of Lippe-Detmold, on the Werre, 17 m. s.w. of Minden. Yarn-spinning, linen-weaving, and carpet manufactures are carried on. Pop. (1881) 13,596; (1885) 15,902.

HERI, *hër'ê*, or HERI-RUD, *hër'ê-rôd*, or HURI: river of central Asia, rising in the Hindu Kush Mountains, about 150 m. w. from Cabul. It flows w. through Afghanistan, more than 300 m. through a fertile and beautiful valley, in

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which stands the city of Herat (q. v.); then bending suddenly n. along the boundary between Persia and Turkestan, and afterward n.w. through Turkestan, it has a further course of fully 400 m., till it terminates in the swamp of Tejend, 150 m. e. of the Caspian Sea. After entering Turkestan, the H. soon begins to lose its water in the sand of the desert, and the latter part of its course for hundreds of miles is dry, except at certain seasons of the year.

HERIOT, n. *hēr'ī-ōt* [AS. *heregeatwa*, a warlike implement, what was given to the lord of the manor to prepare for war—from *here*, an army; *geatwe*, a provision, a treasure]: in *English law*, primarily a tribute to the lord of the manor to assist his preparation for war: a tribute or fine payable in copy hold estates to the lord of the manor on the death of the landholder or vassal: the right of H. is now practically unknown in free-hold estates in England. HER'IOTABLE, a. *-ō-tā-bl*, subject to a tribute or fine.

HERIOT, *hēr'ī-ot*, GEORGE: founder of a magnificent hospital at Edinburgh, the son of a goldsmith in that city, a descendant of the Heriots of Trabroun, East Lothian, was born 1563, June. Admitted, 1588, May, a member of the Edinburgh Incorporation of Goldsmiths, he was, in 1597, appointed goldsmith to Anne of Denmark, consort of James VI. of Scotland, and soon after to the king, on whose accession, in 1603, to the English throne, H. went to London, where, as a court-jeweller and banker, he amassed considerable riches. He died 1624, Feb. 12, without issue, and bequeathed the greater part of his wealth (£23,625) to the town-council and ministers of Edinburgh, to found and endow an hospital in that city for the maintenance and education of the sons of poor deceased or decayed burgesses. The noble structure of Heriot's Hospital, from a design, it is believed, by Inigo Jones, was completed, in 1649, at a cost of £30,000. Next year Cromwell made it a military hospital; but in 1659, 30 boys were admitted. In 1885, above 200 boys were maintained and educated in it, half of whom were non-resident. In 1837 an act of parliament was procured for the erection of free schools for poor children (ultimately 16 in all). The scheme of the Educational Endowment Commissioners, embodied in an act of 1885, reconstituted the Hospital and closed the free schools. The act provided that the Hospital should cease to exist as such a year after the date of the act, and that 120 foundationers (orphans and fatherless children of Edinburgh burgesses) should henceforward be boarded out. A new Hospital School takes the place of the Hospital; and in it are to be taught to the foundationers and outdoor pupils mathematics, drawing, science, and modern languages, while laboratory and workshop training is also given. Instead of the free schools, a sum of £3,500 is to be spent in paying fees for poor children at public schools. Bursaries for deserving pupils open the way to the High School and the University. The Watt Institution is to become the Heriot-Watt Institution, and be subsidized from the Heriot funds, to provide for older students

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thorough scientific instruction in evening classes at moderate fees; with powers to constitute a day college for higher technical education. Upwards of 20 lecturers teach science and languages. In 1884, the annual revenue of the Hospital was above £25,000.

HERISAU, *hǎ'rē-sow*: town of Switzerland, canton of Appenzell, cap. of the Outer Rhodes, at the junction of the Glatt and Brühlbach rivers, 7 m. n.w. of Appenzell, 2,550 ft. above the sea. It contains a church with a tower supposed to have been built in the 7th c., public library, town-house, arsenal, poor-house, casino, hospital; manufactories of muslin, cotton, and silk; tanneries, bleacheries, paper-mills, and dye-works; beautiful walks and gardens, and on the surrounding heights the ancient castles of Rosenberg and Schwäneberg. The famous baths and goat's-whey cure of Heinrichsbad are about a m. distant. H. was settled by the Romans; Christianity was introduced early in the 7th c.; and the people purchased their freedom from the jurisdiction of the abbots of St. Gall 1463. Pop. (1870) 9,736 ; (1888) 11,082.

HERISTAL, *hě'r'is-tál*, or HERSTAL, *hěrs'tál*: village of Belgium, province of Liege, extending along the left bank of the Maas about three m., immediately below the city of Liege, of which it may almost be considered a suburb. The people find employment in the coal-mines, the iron and steel-works, which are here carried on. Some ruins remain of the castle of H., the birthplace of Pepin le Gros (father of Charles Martel, and great-grand-father of Charlemagne), and from which he had his title of Pepin d'Heristal. Pop. (1888) 11,918.

HERITABLE, a. *hě'r'ĩ-tǎ-bl* [L. *hērēs*, an heir, *hērēdis*, of an heir; *hereditāre*, to inherit]: that may or can be inherited; that passes to the heir; in *Scotch law*, *heritable* and *movable* distinguish things which go respectively to the heir and to the executors. HERITABLE BOND, in *Scotch law*, a bond for a sum of money, and with it a conveyance of land in security thereof. HERITABLE SECURITIES, in *Scotch law*, mortgages and charges on land. HER'ITAGE, n. *-ĩ-tāj* [F.]: an estate which passes from an ancestor to an heir; in *Scrip.*, those whom God adopts. HERITOR, n. *hě'r'ĩ-tér*, in *Scot.*, a landholder in a parish, liable to public burdens: the heritors collectively are vested with the fee of the church and churchyard.

HERITABLE JURISDICTIONS: remarkable class of jurisdictions held hereditarily from the crown in Scotland, abolished (1748) by 20 Geo. II. c. 43. These jurisdictions, numbering more than a hundred, consisted of sheriffships, stewartries, constabularies, but principally of regalities and baileries, with some offices of distinction. One of the more important was the office of lord justice-general, and the lordship of Argyle and the Isles, both belonging to the family of Argyle. In virtue of their hereditary rights, the possessors of these jurisdictions exercised an arbitrary power over vassals and others within their domain, and could punish them by fines,

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scourging, imprisonment, and even in some cases put them to death, without interference of the common law. The legislative act abolishing these odious jurisdictions, followed by the appointment of sheriffs on a proper footing, marks an important era in the history of Scotland.

HERKIMER, *hər'kī-mēr* (Ger. HERCHHEIMER), NICHOLAS: about 1715–1777, Aug. 16; b. in the present Herkimer co., N. Y.: soldier. He was elected a lieut. of militia when 30 years old, was in command at Fort Herkimer on the Mohawk (site of German Flats, N. Y.) during the combined French and Indian attack 1758, became col. of militia in Tryon co. 1775, and brig.gen. 1776; led an expedition against the tories and Indian allies under Sir John Johnson 1776; and was ambuscaded by the British and Indians in a wooded ravine near Oriskany, defeated, and wounded while conducting an expedition to the relief of Fort Stanwix (Rome, N. Y.), then besieged by Col. St. Leger. He died at his home from unskilful amputation. Congress voted him a monument 1777, Oct., but it was not till 1884 that the memorial was erected, and then chiefly through the efforts of the Oneida Hist. Soc. It cost \$17,000, of which the federal govt. gave \$4,000, the state of N. Y. \$3,000, and citizens \$10,000

HERKOMER, *hər'ko-mēr*, HUBERT: painter: b. Waal, Bavaria, 1849, May 26; son of a skilful wood-carver who emigrated to the United States 1851 and six years afterward settled in Southampton, England. H. entered the Southampton Art School 1862, and won a bronze medal; accompanied his father to Munich 1865, studied art a year with Prof. Echter, entered the South Kensington School 1866, and the same year aided in founding a drawing school for the study of living models. In 1869 he exhibited his first painting and became a draughtsman on wood for the London *Graphic*, 1873 made his first exhibition at the Royal Academy, 1875 completed *The Last Muster*, which gained one of the two grand medals of honor awarded the English school at the Paris exhibition 1878, 1879 was elected an associate of the Royal Acad. and honorary member of the Imperial Acad. of Vienna, 1885 succeeded John Ruskin as Slade prof. of fine arts at Oxford Univ., and 1886 was awarded one of the 'great gold medals' for art at the Berlin exhibition. He is a member of the leading art societies of Europe, has founded a school of art at Bushy, Herts, England, and is a musician and composer of high merit.

HERMÆ, n. plu. *hər'mē* [L. and Gr. *Hērmēs*, Mercury]: heads carved on the top of a square pedestal or post diminishing toward the base, used to mark the boundaries of land: see HERMES.

HERMANDAD, *ār-mân-dáth'*, THE (Sp. 'Brotherhood'): association of the principal cities of Castile and Aragon, bound together by a solemn league and covenant for the defense of their liberties in seasons of trouble. These confederacies were sanctioned by the sovereigns, as agents

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for suppressing the increasing power of the nobles, and for maintaining public security through the land with no cost to the government. In Aragon, the first H. was established in the middle of the 13th c., and in Castile about 30 years later. In 1295, 35 cities of Castile and Leon formed a joint confederacy, and entered into a compact, pledging themselves to take summary vengeance on every noble who had either robbed or injured a member of their association and refused to make just atonement for the wrong; or on any one who should attempt, even by the order of the king, to levy an unjust tax. During the long anarchy in which the Christian rulers of Spain were impotent to maintain order in their own dominions, the *Santa H.*, or Holy Brotherhood, had presented the only check against the unbounded license of the nobles. The crimes reserved for its jurisdiction were all acts of violence and theft committed on the highroads or in the open country, and the penalties attached to each misdemeanor were specified with the greatest precision in the codes of laws enacted at different times in the yearly assemblies of the deputies of the confederate cities. An annual contribution was, moreover, assessed on every hundred householders or *vecinos*, for the equipment and maintenance of the horse-men and *quadrilleros* or officials of the brotherhood, whose duty it was to arrest offenders, and enforce the sentence of the law. Although the H. was regarded with much disfavor by the aristocracy, it continued for many years to exercise its functions, until the country was cleared of banditti, and the ministers of justice enabled to discharge their duties without hindrance. In 1498, the objects of the H. having been obtained, the brotherhood was reduced to an ordinary police.—See Mariana, *History of Spain*; Pulgar, *Reyes Catolicos*; Prescott, *History of Ferdinand and Isabella*.

HERMANN, or HERMAN, *hěr'mân* (Lat. *Arminius*): name that first appears in Germany in the 6th c. after Christ, but is now become common. It has been erroneously transferred to that prince or chief of the Cherusci, called by Roman writers Arminius, and by the Greeks Armenios. This personage was b. B.C. 16; d. A.D. 21; son of Sigimer. The period in which the youth of H. was cast was fraught with the greatest peril to Germany. To secure the frontiers of the empire against the attacks of the Germanic tribes, the Romans had been forced to advance into the more turbulent districts, and to build a series of forts to overawe the inhabitants. In this manner, not only had most of the Celtic tribes from the Alps to the Danube been subdued, but during B.C. 9—A.D. 4, Drusus and Tiberius had penetrated into the n.w. of Germany as far as the Elbe, laid out a number of military roads, erected fortresses in the country and reduced the different tribes to such dependence upon Rome, as virtually amounted to complete subjugation. With so much prudence and caution had Tiberius proceeded that the Germans continued to all appearance on the best terms with the Romans, gradually adopted Roman habits, and frequently and

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readily took service in the Roman armies. Thus H. and his brother Flavius had enrolled themselves under the Roman standards, and as leaders of Cheruscan auxiliaries, had not only obtained Roman citizenship and the rank of knighthood in the country of the Danube, but had likewise acquired a knowledge of the Latin language, and a deep insight into the arts of war and policy as practiced by the Romans. Enriched with these experiences, when H., after the expiration of some years, returned home, he found the state of affairs considerably changed for the worse, through the unskilful despotism of the Roman viceroy, Quintilius Varus. H. now conceived the plan of delivering his country from its oppressors. All the tribes and leaders as far as the Elbe were secretly summoned; Varus was lulled into security, and induced to dispatch portions of his army to different points, and with the remaining portion, which was just on the point of leaving the country of the Cherusci for the Rhine, to quit the highway. He was thus lured into the impassable districts of the *Teutobury Forest* (either in the upper valley of the Lippe, or the adjoining Prussian territory); an engagement took place, which lasted for three days. The result was the annihilation of the whole Roman army (A.D. 9). When intelligence of this defeat reached Rome, it excited the greatest consternation and anxiety. The Germans, however, who had only their own liberation in view, prosecuted their victory no further; and for a few years both parties rested. When Germanicus (q.v.), however (A.D. 14), assumed command on the Lower Rhine, he resolved to crush the barbarians. In two successive campaigns, A.D. 14 and 16, he reduced H. to great straits; but Germanicus was recalled to Rome by Emperor Tiberius, A.D. 17, and the results of his victorious activity were lost. From this time no Roman army ever ventured to penetrate from the Rhine into the interior of Germany, and this fact, which decided the future of Germany, must be ascribed chiefly to Hermann. Nevertheless, no sooner was the foreign enemy expelled, than internal feuds broke out with more violence than ever. In the course of these, H. was slain by his own relatives, in the 37th year of his age and twelfth of his leadership. Tacitus says of him: 'He was, without doubt, the deliverer of Germany; and unlike other kings and generals, he attacked the Roman people, not at the commencement, but in the fulness of their power; in battles, he was not always successful, but he was invincible in war. He still lives in the songs of the barbarians, though unknown to the annals of the Greeks, who admire only what belongs to themselves; by the Romans, he is not estimated according to his merits, because in our admiration for the past we neglect the present.'—Compare Wietersheim, *Der Feldzug des Germanicus* (Leip. 1850); Massmann, *Arminius, Cheruscorum Dux ac Decus, Liberator Germaniæ* (1839); Böttger, *H., der Cheruskerfürst* (Han. 1874).—A colossal statue of H., on a hill near the town of Detmold, was publicly unveiled 1875, Aug. 16. The work, intended to be a national monument, is by the

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sculptor Bandel, who devoted to it a large portion of his life.

HERMANN, JOHANN GOTTFRIED JAKOB: 1772, Nov. 28—1848, Dec. 31; b. Leipsic: German philologist. He studied at Leipsic and at Jena, and was made, 1798, extraordinary prof. of philosophy. In 1803, he was called to Kiel as ordinary prof. of eloquence, becoming in addition prof. of poetry 1809, and in this position he remained till his death. Distinguished by liberality of mind and love of truth, by eloquence and extensive culture, H. continued till his latest days to attract a large circle of students to his class-room, which sent forth some of the most celebrated teachers in the schools and universities of Germany. The first department which he began to cultivate on original principles was the science of metre, of which he attempted to develop a philosophical theory from the categories of Kant; and on this subject he wrote, besides *Handbuch d. Metrik* (1798), several Latin treatises, among which *Epitome Doctrinæ Metricæ* (1818) reached a third ed. 1852. Of wider importance, however, was the new method which he introduced into the treatment of Greek Grammar, which has had its influence on the grammar of Latin, and even of modern languages, especially of the German. The principles of this method are not only explicitly developed in *De Emendendâ Ratione Græcæ Grammaticæ* (1801), but are practically illustrated in his numerous editions of the ancient classics. H.'s power of dealing with chronological, topographical, and personal questions, is shown in his *Opuscula* (7 vols., Leip. 1827–30), which also contain some poems breathing the spirit of Roman poetry. Consult Jahn's *Gottfried H., eine Gedächtnissrede* (Leip. 1849).

HERMANNSTADT, hër'mân-stât (Lat. *Cibinium*, Hung. *Nagy-Szeben*): important town of Hungary, formerly cap. of Transylvania, on an affluent of the Aluta, near the n. base of the Eastern Carpathians. H., originally a village, is called, on the ancient seal of the town, *Villa Hermannî*. The *Hermann* from whom the town has its name was a citizen of Nürnberg, and is said to have led hither a colony in the 12th century. H. is the seat of a Greek archbishop. There is an upper town, lower town, and four suburbs. Tanning, wax-bleaching, and the making of cloth, combs, paper, candles, soap, and gunpowder, are the industries. Pop. (1890) 21,465, half of whom are Protestants, and about 12,000 Germans.

HERMAPHRODITE, n. hër-măf'rō-dīt [Gr. *Hērmēs*, the god Mercury, as representing the male principle; *Aphrōdītē*, the goddess Venus, as representing the female principle]: a living creature which is both a male and a female. In bot., a plant whose flowers contain both the male and female organs of reproduction (stamens and pistils), and are therefore by themselves capable of producing perfect seed. Flowers containing only male or female organs are called *unisexual* or *diclinous* (q.v.), and when produced on the same plant, *Monœcious* (q.v.); when on different plants, *Diœcious* (q.v.). Hermaphrodite flowers are also called

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monoclinous [Gr. *monos*, one, and *klinē*, a couch], and *perfect* flowers. HERMAPHRODITE, a. designating both sexes. HERMAPH'RODIT'IC, a. -*dīt'ik*, uniting in one body the character of both sexes. HERMAPH'RODIT'ICALLY, ad. -*ly*. HERMAPH'RODE'ITY, n. -*dī'ī-tī*, being in the state of a hermaphrodite. HERMAPH'RODISM, n. -*rō-dīzm*, or HERMAPH'RODITISM, n. -*dīt-izm*, state of being a hermaphrodite. HERMAPHRODITE BRIG: see BRIG—BRIGANTINE.

HERMAPH'RODITISM: state or condition of those organisms, animal or vegetable, in which the sexual characteristics of the male and female are united in the same individual. The name is derived from the fable of the union into one body of the bodies of Hermaphroditus, son of Hermes and Aphrodite, and the nymph Salmacis. See Ovid's *Metamorphoses*, lib. iv. v. 347.

There are two kinds of H., the true and the spurious; in the former, there is actual co-existence, in the same individual of male and female reproductive organs; while in the latter, there is only an appearance, from arrest or excess of development, of a union of the distinctive organs of both sexes. True H. is the normal type of sexual structure in most plants: see HERMAPHRODITE, in Botany. It likewise occurs normally in many of the lower invertebrata, and as a monstrosity in the higher invertebrata, and even occasionally in certain vertebrata.

Recent investigations of Balbiani show that certain Infusoria (e.g., the common green Paramœcium), at all events occasionally present the phenomena of hermaphroditism. In some of the polyps (e.g., the Hydra and some of the Actiniæ), the sexes are united in the same individual; the same is the case with some of the Acalephæ (namely, the Ctenophora), with certain orders of Helminthes or parasitic worms (the Cestodes and Trematodes), with certain Annelides (the Hirudinei and Lumbricini, of which the leech and the earth-worm are typical examples), with many acephalous mollusks, with the Pteropods and with most of the Gasteropods; while in the highest order of mollusks, the Cephalopods, the sexes are always distinct. Among the crustaceans, the Cirrhipeds are mostly hermaphrodites; but in the other and higher orders, if H. exists, it is only abnormal, and gives rise to a monstrosity; e.g., the common lobster has been observed with male organs on one side of its body, and female organs on the other. True but not normal H. also is occasionally found in insects. In 14 cases given by Oehsenheimer, the right side was male, and the left female; in nine cases it was the reverse. Prof Owen remarks that in insects hermaphrodites are occasionally found, where the characters of one sex, instead of extending over one half, are limited to particular parts of the body which agree in the main with the other sex. Thus, in an individual of *Gastrophaga quercus*, the body, the antennæ, and the left wings were those of the female, while the right wings were those of the male.

True (though abnormal) H. is far rarer among the vertebrata than in insects or crustaceans. Various instances, however, are on record of fishes presenting a lateral her-

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maphroditic structure, or a roe on one side and a milt on the other; references to various cases reported are in Sir James Y. Simpson's learned and elaborate article, 'Hermaphroditism,' in *The Cyclopædia of Anatomy and Physiology*: see the same article for cases of similar H. in birds and mammals, including the human subject, namely, cases in which there were female structures on one side, and male structures (more or less perfect) on the other.

Returning from these cases of abnormal true H. to those of normal true H., the question naturally suggests itself—Can these true animal hermaphrodites, possessing male and female organs, fertilize themselves? As far as is known, none of the terrestrial hermaphrodites, such as land mollusks (e.g. the common snail) and earthworms, are self-impregnating. They all pair, and in this respect offer a strong contrast with hermaphrodite plants. But of aquatic animals, there are many self-fertilizing hermaphrodites. On the general subject, see further, Steenstrup's *Untersuchungen über das Vorkommen des Hermaphroditismus in der Natur* (1846).

Spurious H. is a subject of purely a professional character: see Sir James Y. Simpson's article (noted above); also case recorded a number of years ago by Dr. Girdwood in *The Lancet*.

HERMAS, *her'mas*, SHEPHERD OF (i.e., a book called *The Pastor*, written by Hermas): name of a book much esteemed in the early church, as is evidenced in quotations from it by Irenæus, Clement of Alexandria, Origen, and other fathers. Beside two Greek copies (one in the Sinaitic manuscript, found 1859), we have two Latin translations. The book is commonly classed among writings of the apostolic fathers. The authorship has been variously ascribed; by some to Hermas, friend of the apostle Paul, mentioned Rom. xvi. 14; by others to several later writers. The most probable conjecture assigns the authorship to Hermas, brother of Pius who was bishop (pastor) of the church in Rome 139–154; and assigns its date to about 130.

The work contains many allusions which appear to be directed against the Montanistic errors—a fact irreconcilable with the supposition of its having been written in the apostolic age. *The Shepherd*, whichever H. may have been its author, seems to have been originally written in Greek. It is a mystical work, divided into three parts—the first containing four *Visions*; the second, twelve *Precepts*; and the third, ten *Similitudes*. It has been described by Dean Stanley as the *Pilgrim's Progress* of the early church; and though it contains little positive dogmatic teaching, is a most interesting monument of the Christian life of that early period.

HERMENEUTICS. n. plu. *her'mě-nū'tiks* [Gr. *hermeneu'tikos*, pert. to explanation—from *hěrmēneus*, an interpreter—from *Hěrmēs*, Mercury]: science of interpretation of any writings, particularly of Scripture. HER'MENEU'TIC, a. -*tīk*, also HER'MENEU'TICAL. a. -*tī-kāl*, interpreting; explanatory. HER'MENEU'TICALLY, ad. -*lī*.—*Hermeneutics*

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forms a branch of the same general study with exegesis (q.v.), and indeed is often confounded with that science; but the distinction between the two branches is marked. To hermeneutics properly belongs the 'interpretation' of the text—that is, the *discovery* of its true meaning; the province of exegesis is the 'exposition' of the meaning so discovered, and the practical office of making it intelligible to others in its various bearings, scientific, literal, doctrinal, and moral. Hence, while (see EXEGESIS) the laws of interpretation have many things in common with those of exposition, to the especial province of hermeneutics belongs all that regards the text and interpretation of the Holy Scripture; the signification of words, the force and significance of idioms, the modification of the sense by the context, and the other details of philological and grammatical inquiry; the consideration of the character of the writer or the persons whom he addressed; of the circumstances in which he wrote, and the object to which his work was directed; the comparison of parallel passages; and similar considerations. All these considerations, although seemingly purely literary, are modified by the views entertained as to the text of Holy Scripture, and especially on the question of its inspiration, and the nature and degree of such inspiration.

So far, there is but little difference between Rom. Cath. hermeneutists and the more strict school of Prot. critics. At this point begins the fundamental distinction between the two. With Protestants, the sense of the Scripture once truly ascertained from the Scripture itself, interpreted by the rules explained above, is regarded as final, and is accepted by the interpreter as the revelation intended by God. With the Rom. Catholics, the individual judgment which is formed on these rules, and which, as to the actual meaning of the particular passage, may possibly coincide with that of the Prot., is still controlled, and, it may be, overruled by the authoritative interpretation of the church, as conveyed in the decrees of councils, or the dogmatical definitions of pontiffs accepted by the universal church. From this, it is often inferred that in the Rom. Cath. Church the science of hermeneutics is a nullity, and that no freedom of interpretation is practically permitted. The Rom. Cath. critic, however, maintains that he exercises, and is free to exercise, on the text of Scripture the same liberty of interpretation which the Prot. may claim; and that it is quite possible that he may arrive at precisely the same conclusions with the Prot. as to the meaning of *the scriptural text considered in itself alone*. But he differs from the Prot. in believing that the Scripture does not contain the whole of God's revelation, and, therefore, that, as one passage of Scripture is modified by another, so the scriptural revelation itself may be modified by other revelations of God conveyed to us through other mediums, e.g., tradition: see TRADITION. On a somewhat cognate subject, see DEVELOPMENT OF DOCTRINE. As regards the literature of Hermeneutics, most of the writers named in the article EXEGESIS have dealt with both branches of the science. They are mostly Prot. The

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most remarkable modern Rom. Cath. hermeneutical writers are Hermann Goldbagen (Mainz 1765); Seemüller, *Hermeneutica Sacra* (1779); Mayr, *Institutio Juap. Sacri* (1789); Jahn, *Enchiridion Hermen.* (Vienna 1812); Arigler, *Hermeneutica Generalis* (Vienna 1813); Unterkircher, *Hermeneutica Biblica* (1831); Ranolder, *Herm. Bibl. Principia Rationalia* (Fünf Kirchen 1838); Schnittler, *Grundlinien der Hermeneutik* (1844); Glaire's *Hermeneutica Sacra* (1840).

HERMES, *hér'mêz*: in Greek mythology, a god, corresponding to the Rom. Mercury; the god of speech, eloquence, the sciences, traffic, theft, and herds. His origin and character are peculiarly complicated and untraceable. Under his name are comprised several mythological personages, who personified the external expression of thought, whether human or divine. The principal of these are Teti, Thoth, Theuth, or Taut, the Egyptian H.; the Greek god properly so called; the Phœnician Taaut; the Carthaginian Sumes; the Etruscan Turms; the Chaldæan Duvanai; and the Latin Mercurius. The oldest of these was undoubtedly the Egyptian, whose worship appears as early as the 11th dynasty. Thoth was generally represented with the head of an ibis (*heb*), which was his living emblem, and expressed his name in hieroglyphs. These, according to the legends, he had invented and revealed to the monarch Thamus. Many religious books were believed to have been written by him, and all literary compositions were dedicated to him. He was scribe or clerk of the gods, and in the future state justified the good against their accusers, as he formerly had Osiris in the trial of that god and Typhon. In the contest between Osiris and Typhon, when Horus had torn off the diadem of his mother, Isis, Thoth is reported to have replaced it with the head of a cow. Locally, he was lord of Sesenu, Hermopolis, the modern Eshmuni, but his worship was universal. He was a self-created, self-existent god, though some legends of later date make him the son of Chnumis, or of the Nile. In his celestial character he was identified with the moon, *Aah*, and was supposed to preside over that luminary, and the souls which made it their habitation. He inscribed also the names of monarchs on the *asht*, or Persea, the tree of life of the Egyptian paradise.

In the Phœnician mythology, Taaut, or H., seems derived from the Egyptian, and was son of Misor, or Egypt, inventor of writing and the sciences; while another form of his name, Sumes, is that of the Punic H. of Carthage. It is, however, clear that the name Taaut is derived from the Egyptian Tet, 'word' or 'speech.' The tradition of H. has passed to the Arabs, who recognize two Hermes, one who lived 1,000 years after Adam, called by the Chaldees Ouriai or Duvanai, the great master; another, surnamed Thani, doctor of the world and liberator of men from error, a prophet and philosopher; and Trismegistus, or Trismegist, the thrice-great, who lived at Calovaz, in Chaldæa.

Most important of all was the Greek Hermes. The various traditions which make him son of the Egyptian Nilus, whose name was never pronounced, or the sacred Thoth.

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are clearly Egyptian; that which derives his origin from Ouranos, and Hemera, is probably the Phœnician myth. But the principal H. in whom the actions of the others centred, was son of Zeus and Maia, born on Mount Cyllene, in Arcadia, and originally a Pelasgian divinity who presided over cattle and commerce. His birth is placed subsequent to that of Apollo. Four hours afterward, according to the hymn, he left his cradle, and having found a tortoise, invented the *chelys*, or lyre, using its shell as a sounding-board, and making the strings out of the entrails of a sheep. At nightfall he stole 50 of the sacred herd of Apollo from Pieria, drove them to the banks of the Alpheius, slaughtered and dressed two of them. To escape detection, he had bound his feet with branches of the myrtle and tamarisk. Apollo, missing his cattle, dragged H. before Zeus, at Olympus, who condemned him to restore them; but Apollo, enchanted by the sound of the newly invented lyre, offered H. his cattle in exchange, gave him his whip or goad, taught him how to tend cattle, and presented him with the caduceus. In the *Iliad* and *Odyssey* are no traces of his thievish propensities, which were introduced by the later poets. In the Gigantomachia he liberated Zeus from Typhon, and restored him his limbs. H. was messenger, herald, and ambassador of the gods; he bound Prometheus to Caucasus; killed Argus with the hundred eyes; liberated the wandering Io, etc. In the events of the Trojan war, he conducted the goddesses to the fatal judgment of Paris, brought Priam to Achilles, and was patron of Ulysses, to whom he gave the herb molys, to liberate him from Circe. Many heroical and other personages were descended from him. As god of the sciences, he invented the alphabet from the flight of cranes, astronomy, and numbers, weights and measures, music, the lyre, and syrinx, gymnastics, tactics, and the cultivation of the olive. Many festivals were celebrated to him in n. Greece and the islands, as at Pheneia, Cyllene, and Athens; and some of these Hermæa resembled the Saturnalia, slaves being served on these occasions by their masters. His worship, in fact, extended all over the Peloponnesus, the islands of the Ægean, Asia Minor, and even Hesperia or Magna Græcia. Among animals, the tortoise, pig, lamb, and goat, and the young of beasts, were sacred to him; the ibis and the gull (*larus*) among birds; and the palm-tree, black-thorn, cinque-foil, and purslane among plants. H. had a local worship in Samothrace, where he appeared as one of the Cabiri, under the name of Casmilos, son of Hephaistos or Vulcan, and Cabira. In the Eleusinian mysteries, he was represented by the hieroceryx.

The idea of H. seems to have been developed from two origins—the ancient Pelasgic or Arcadian god of shepherds, subsequently considered the patron of barter, of commerce, without any trace of intellectual qualities; and the Phœnician or Egyptian H., introduced by commerce into Greece, with all the attributes attributed by the Orientals to their deity. In art, a similar development is seen from the old

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squared trunks or pillars, called Hermæ and Hermidia, retained till a later period, but by degrees ornamented with a bearded head, to which sometimes are added phallic symbols, the destruction of which at Athens before the sailing of the Sicilian expedition led to a fearful tumult, and the fall of Alcibiades (q.v.). In later but still archaic art, H. is represented bearded, wearing the broad-brimmed petasus, and holding the twisted caduceus. At the time of Phidias, he was represented unbearded, with curly hair, a crafty and charming expression, and the form of an athlete. Instead of the petasus, wings are sometimes arranged in his hair; his boots are winged, and his caduceus has two snakes attached to it. His form is naked, but often has a *chlamys*, or cloak, doubled upon his shoulder, and his hand holds a purse of money; while the cock, referring to his invention of the gymnasium, or the hours of business; the tortoise, allusive of his discovery of the lyre; the palm-tree, emblem of his invention of letters; the goat, referring to his charge of herds, and paternity of Pan; and even the dog, allying him with Anubis, are placed at his side. The most remarkable type of the god was as carrying a ram upon his shoulders (*criophoros*). The caduceus was gilded at the top, painted blue in the middle, and black at the handle.

The Etruscans seem to have derived his worship directly from the Greeks, and represent him with the same attributes and type, but with the Etruscan name *Turms*, as the Camillus of the gods. His worship passed into Rome, under the name of Mercurius, or Mercury, by which he is more familiarly known, supposed to be derived from *mercari*, to traffic. There was something mystic in his cult, for the *feciales* did not know his nature, and he originally had the laurel instead of the caduceus, and the name of his mother, Maia, had been given to the month Maius, or May, on the 15th day of which his festival was held. As early as A.U.C. 259, he had a temple near the Circus Maximus, and his statue in that locality held a purse. At the Porta Capena was a well, sacred to him, and the merchants sprinkled themselves and their goods with the holy-water, obtained by dipping a laurel branch into the well. Tradition made him father of Evander by the nymph Carmenta, and of Larea by the goddess Lara; but the Romans adopted into their religious system the Greek traditions, though later, under the empire, the influx of foreign religions made them confound him with the Egyptian Anubis, and even represent him with a dog's or jackal's head, and depict him of golden or black color. His worship had even penetrated to Gaul, where he was adored under the name of Teutames. —Grüber, *Altclass. Wörterbuch Voce*; Gerhard, *Griechisch. Mythol.* (8vo Berl 1854, I. 260); Hartung, *Rel. d. Römer* (8vo Frib. 1843); Birch, *Gall. Antiq.*, pp. 26, 27; Müller, *Arch. d. Kunst*, p. 560.

HERMES, *hēr'mēs*, GEORG: Roman Catholic theologian of Germany, whose system has been the occasion of a long and acrimonious controversy: 1775, Apr. 22—1831, May 26; b. Dreyerwalde, in the diocese of Paderborn, in West-

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phalia. Having received his early education from his parish priest, H. entered the gymnasium of Rheina, and thence was transferred, 1792, as a theological candidate, to the Univ. of Münster, where he speedily distinguished himself, as well by his ability and acuteness, as by his piety and exemplary life. In 1798, he was appointed prof. in the gymnasium of Münster; and after nine years, prof. of theology in the univ. of the same place. His lectures being of a popular character, and addressed mainly to the examination of modern philosophical systems, and thus bearing on revelation, attracted many hearers, and established for H. a high reputation in Germany; and when, 1819, the new mixed Univ. of Bonn was established, H. was appointed to a professorship of theology which he held till his death. His early reputation attended him here, and students flocked to his lectures from all parts of Germany, and even from the Low Countries.

H.'s great object seems to have been to counteract the influence of the philosophical systems, then in their full popularity, especially that of Kant; and with this view, he sought to deduce the foundations of all philosophical inquiry from the same first principles from which the Kantian philosophy takes its departure. His system, therefore, presupposes in the mind, as the starting point of all rational inquiry a blank condition, which, as variously described by friends and enemies, is either simply the absence of all previous conviction, or a state of positive doubt, analogous to the so-called Pyrrhonism of the ancient schools. The Hermesian method of investigation, in like manner discards, in the first stages, and so far as investigation is permitted to extend, all principle of authority; and in the details of metaphysical inquiry, in the selection of the arguments of the existence of God, and of the nature of divine attributes, he departed widely from the old text-books of the schools; though in the general sum of the doctrines of the Rom. Cath. Church, his orthodoxy does not appear to have been called in question. The objections which arose were against his method.

Though his work, *Einleitung in die Christ-Katholische Theologie* (Introduction to Christian-Catholic Theology), was published 1819, and again 1831, it was not until after H.'s death that the controversy regarding his system took a definite form, and eventually, at the instance of Clement Augustus Droste-Vischering, Abp. of Cologne, was referred to Rome. A great controversy ensued, the chief assailant of the system being a learned Italian prof. of the Collegio Romano, the Jesuit, Father Perrone; while its defenders were almost exclusively Germans, mostly H.'s own friends and pupils. The controversy was protracted; and a very large, and it must be confessed, misty literature, has grown out of the subject. The result was that the doctrine of H. was condemned by a brief, 1835, Sep. 26. The German partisans of H., who had at their command a theological journal of considerable circulation, the *Journal of Bonn*, protested from the first against this condemnation, to which they applied, at least practically, the well-known distinc-

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tion of 'fact' and 'right,' long ago employed by the Jan-senists; contending, that though the doctrines contemplated by the brief were rightly condemned, as being unsound and untenable, yet no such doctrines were taught by H., or contained in his book. Two of the leaders of the party, Professors Braun and Elvenich, went to Rome to urge a reconsideration of the condemnatory decree; but their mission was unavailing, and the decision was ordered to be enforced without reserve. The Abp. of Cologne accordingly insisted on unqualified submission; and the opposition which he aroused tended much to complicate the difficulties of a conflict between him and the Prussian government, as to 'mixed marriages,' and which led eventually to his arrest and deprivation by the crown. The controversy was continued, in Rome and in Germany, for a considerable time; by degrees, however, the Hermesian party fell away. The professors of various universities, individually or in bodies, accepted the papal condemnation; and though some have still persevered in their resistance they have been almost exclusively of that extreme party, many of whom openly seceded from Rome, under the name of the German Catholic Church, and whose principles go even beyond orthodox Lutheranism, and may be regarded as verging on the most advanced Rationalism.

HERMESIANISM, n. *hēr-mēz'ī-an-izm*: in *chh. hist.*, method of religious inquiry taught by Georg Hermes (q.v.).

HERMETICAL, a. *hēr-mēt'ī-kāl*, or HERMET'IC, a. *-īk* [mid. L. *hermētīcūs*, relating to alchemy—from Gr. *Hermēs*, Mercury, the fabled inventor of chemistry]: chemical; perfectly closed, so that no air, gas, or spirit can escape or enter. HERMET'ICALLY, ad. *-lī*. HERMETICALLY SEALED, closed up or sealed by fusion, as the closing of a glass tube by melting the ends; closed securely. HERMETICAL MEDICINE, an obsolete system of medicine which looked for its remedies not to nature, but to the philosophy attributed to the mystic Hermes Trismegistus. Astrology was used to discover the origin and termination of diseases. HERMETICAL PHILOSOPHY, a philosophy which attempted to account for all physical phenomena by the operation of the three chemical agents, salts, sulphur, and mercury.

HERMETIC BOOKS: ancient writings of a variety of classes, so named at different periods—some claiming to be divinely inspired, others to open the hidden philosophy of the nature of things, others to contain the secrets of alchemy or astrology. Among the Egyptians, all books or literary compositions appear to have been dedicated to Thoth, and notices of this nature are appended to several papyri. The earlier religious books, such as the Ritual, were supposed to have been written by the fingers or under the dictation of the god Thoth himself, and several chapters of this and other works are stated to have been found on monuments written by the god. Hence the word hermetic, taken in its most extended sense, meant *inspired*, as Thoth was the scribe of the gods. Various traditions pre-

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veiled as to the number and nature of these books. Clement of Alexandria mentions 42 H. B., which contained the sum of all knowledge, human or divine; while others, as Iamblichus, raise their number to 20,000; and Manetho gives the astronomical cipher of 36,525. The series of books mentioned by the great authors were: 1. Sacred hymns of Osiris; 2. On the Life of a King; 3-6. Astrological precepts and observations; 7-17. Cosmography, geography, and chorography of Egypt and the Nile; 18-27. Laws, and discipline of priests; 28-33. Medicine. Portions of these books have been undoubtedly found in the hieratic papyri. Under the name of H. B., several writings, principally Greek, have been handed down, which pretend to be translated from the Egyptian, and similar books may have existed in the 2d c. But these books contain notions of the Neo-Platonic school of Porphyry and Iamblichus, and appear intended as philosophical works giving an explanation of the genesis of the Cosmos, the nature of God and man, in antagonism to the books or the Old and New Testament, from sources partly Egyptian, partly Persian and Rabbinical, and other traditions of the Alexandrian school. They were produced to supply a substitute for Christianity, when it had become evident to the thinkers of the pagan world that Christianity was rapidly rising into supremacy over all the other philosophies. The name of hermetic writings was particularly affected by the alchemists and astrologers of the middle ages, e.g., *Tractatus Vere Aureus*, by Dominicus Gnostus, 1610; *Tabula Smaragdina*, or 'Emerald Table of Alchemy,' 1541; and various others. The principal tenets of the H. B. are, that the Creator made the Cosmos by his word out of fluid; that the soul is a union of light and life, and proceeded from the cosmic soul; that death and life are only changes, and that nothing is destructible; that the soul transmigrates; that passion or suffering is the result of motion.—Baumgarten-Cruzius, *De Librorum Hermeticorum Indole* (Jena 1827); *Hermes Trismegistus*, a Scheible (12mo, Stuttg. 1855); *Hermes Trismegistus (Poemander)* a Parthey (8vo, Berol., 1854).

HERMINIA, n. *hēr-mĭn'ĭ-a* [Gr. *Hermēs*, the Greek god corresponding to the Latin Mercury]: typical genus of *Herminidæ*, family of moths, group *Geometrina*.

HERMIONE, n. *hēr-mĭ'o-nē*: in Gr. *myth.* daughter of Menelaus and Helen, and the wife of Orestes.

HERMIT, n. *hēr-mĭt* [F. *hermite*—from mid. L. *hērēmītā*—from Gr. *erēmītēs*, a solitary—from *erēmĭā*, a desert: It. *eremita*, a hermit]: one who retires from society and lives in solitude for devotional purposes; an anchorite; a recluse or ascetic. *Hermit* was one of the names given in the early ages, and still more in the later church, to a class of solitary ascetics, who, for religious purposes, withdrew from the ordinary intercourse of life, and took up their abode in natural caverns or rudely formed huts in deserts, forests, mountains, and other solitary places. In the first centuries, the names of Eremite and Anchorite (q.v.) were

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indiscriminately applied to these solitaries; but the word *eremita* having been adopted into Latin, it is more commonly used in the modern languages which are derived from the Latin; and the Germans use the name *Einsiedler*, which is of the same signification. The hermits of the middle ages, like the primitive anchorites, often lived in complete solitude; but a much more common, and, in its influence on the church, more important form of the institute, was that of a community of hermits, each possessing his separate hermitage, but all meeting at stated times for mass, prayer, religious instruction, and other common and public exercises. The various hermits of this class are regarded as constituting religious orders, and though never attaining to the popularity which distinguished the Franciscans, the Capuchins, the Dominicans, and other active orders, they form, nevertheless, a numerous and influential element in the spiritual life of the Rom. Cath. Church. The most remarkable of the eremitical orders are—the Hermits of St. Augustine, who trace their origin to the holy father of that name, but are subdivided into several varieties which had their rise in the 11th, 12th, and 13th c.; the Camaldolese, founded by St. Romuald 1012; the Celestines, branch of the Franciscans, established by Peter Murrone, afterward Pope Celestine V.; the Hieronymites (q.v.) established first in Castile in the 14th c., thence introduced into other parts of Spain and into Italy by Lope d'Olmeda 1424; and the Paulites, so called from one St. Paul, the first hermit, but an institute of the 13th c., which had its origin in Hungary, and attained wider extension and greater popularity than perhaps any other among the eremitical orders.—See Helyot, *Histoire des Ordres Religieux*; also Wetser, *Kirchen-Lexicon*, art. *Einsiedler*. HERMITAGE, n. -mĭ-tĭj, or HERMITARY, n. -tĕr-ĭ, cell or hut of a single hermit; sometimes the aggregate of the cells occupied by the members of a single community. Many of these, from the reputation of their inmates, or as being the scenes of certain popular miraculous legends, attained great celebrity, and became the nuclei of important ecclesiastical establishments, and, in some instances, of large and popular cities. Figuratively, the term denotes a secluded and solitary abode. HERMITICAL, a. -i-kāl, pertaining to a hermit or to a retired life.

HERMIT CRAB: common appellation of a large family (*Paguridæ*) of crustaceans, of the order *Decapoda*, sub-order *Anomoura* (see CRAB), having the abdominal or tail segments much more largely developed than in true crabs, but undefended by hard plates, and not forming an organ for swimming, as in lobsters, prawns, and other *Macroura*. The soft and tender tail requires a protective covering, which the instinct of the hermit crabs leads them to find in some turbinated univalve shell of suitable size. The most common British species (*Pagurus Bernhardus*) may be found wherever little pools are left by the tide on a rocky or shelving coast. Shells or whelks, periwinkles, etc., may be seen moving about in the pools in a manner very different from that in which they were carried by their original

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molluscos owners, having now become the property and habitations of hermit crabs, by which, perhaps, the mollusks were eaten. On the slightest alarm, the H. C. retires into the shell, guarding the aperture of it with one claw.



Hermit Crab (*Pagurus Bernhardus*):

a, animal out of the shell; *b*, in shell; *c*, a jaw-foot.

which is much larger than the other, the hard points of the feet also projecting a little. The whole structure of the animal is adapted to such a habitation. The part which in the lobster becomes a finlike expansion at the end of the tail, becomes in the H. C. an appendage for firmly holding by the shell; and so firmly does the H. C. hold, that it may be pulled in pieces, but cannot be pulled out. Some species have suckers to render the hold more perfect. Increase of size, however, renders it necessary for hermit crabs to relinquish their old shells and seek new ones. Hermit crabs are interesting inmates of the aquarium, but their locomotive habits and their voracity make them unsuitable for an aquarium otherwise very finely stocked. They feed on mollusks, and on all the animal garbage of the sea-shore.—Some of the hermit crabs of warmer climates are much larger than the British species: some of them (genus *Cenobita*) inhabit land-shells, and some are found even at a distance from the sea.

HERMODACTYL, n. *hēr'mō-dāk'tīl* [Gr. *Hērmēs*, Mercury; *daktūlos*, a finger]: Mercury's-finger, root shaped like a heart flattened, and of white color, brought from Turkey, and formerly used in medicine for gout and rheumatism. It is mentioned by Alexander of Tralles, 560; Paulus Ægineta, a century later; Avicenna, Serapion etc. By some old writers, it was termed *anima articularum*, or *the soul of the joints*. Corms, probably of several species of colchicum, are still sold in Greece and in the East under the name of hermodactyls. No modern experiments have been

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made to determine the activity of hermodactyl, and the subject is one rather of historical than of practical interest.

HERMOGENIANS, n. *hēr-mo-jē'nī-anz*: obscure, semi-Christian sect, followers of Hermogenes, who lived toward the end of the 2nd c. Having tendencies toward gnosticism, he believed matter to be the root of all evil, yet that from it was formed everything in the world, the human soul not excepted.

HERMON, *hēr'mon* (known also as **SIRION**, **SHENIR**, **JEBEL ESH SHEIKH**, and **JEBEL ETH THELJ**): highest range of the mountain system of Syria, 40 m. n.e. of the Sea of Galilee, 30 m. s.w. of Damascus, 9,053 ft. above the Mediterranean, and 11,000 ft. above the valley of the Jordan; formed by a spur from Anti-Lebanon. It has a dome-shaped summit supporting three knolls and rising from a ridge extending n.e. and s.w. 20 m. The peaks are covered with snow in winter and bare in summer and autumn; the slopes to the height of 500 ft. are covered by dense forests of oak, white poplar, and brush, and the foot of the range is occupied by vineyards and orchards. The view from the summit comprises all Lebanon, the plains e. of Damascus, Palestine as far as Carmel and Tabor, and on a clear day, Jaffa. H. exhibits the remains of several small temples supposed to date from A.D. 200. It formed the n.e. boundary of Israel, is frequently mentioned in the Old Test., and is believed by many to have been the scene of the transfiguration (Matt. xxii.; Mark ix.), though concerning this there is no definite knowledge.

HERMOPOLIS, or **SYRA**: capital of the Cyclades: see **SYRA**.

HERMOSILLO, *ār-mō-sēl'yō*: city in the n.w. of Mexico, state of Sonora, on the river Sonora about 60 m. e. from the Californian Gulf, and 90 n. of the port of Guaymas. The town lies in a valley, 10 m. long by 4 broad. The climate is dry and very hot, but the place is nevertheless considered healthful, being free from the epidemics which often accompany very high temperatures. The valley is very fertile, and produces grapes, melons, figs, oranges, limes, lemons, citron, peaches, and pomegranates in great abundance. The vine, however, is the principal object of cultivation, not less than 1,500 barrels of brandy being annually made. The town has a large trade with Guaymas being the principal entrepôt in the n.w. part of the country for the trade with the interior. Pop. (1888) 15,000, including many Yaqui Indians.

HERNIA, n. *hēr'nī-ă* [L. *herniā*, a rupture—from Gr. *hernōs*, a branch, a sprout]: the protrusion of some part of the intestine from its proper place; a rupture. **HER'NIAL**, a. of or relating to hernia.—*Hernia* in its widest sense, signifies a protrusion, through an abnormal or accidental opening, of any organ from its natural cavity. Although hernia may occur in many parts of the body, the word, used by itself, is restricted to protrusion of the abdominal viscera.

The way in which hernia may arise will be understood,

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if we bear in mind that the abdominal viscera are subject to violent pressure from the diaphragm and other surrounding muscles. This pressure forces them outward and downward against the walls of the belly; and if at any point these walls are not sufficiently strong to resist this pressure, some portion of the viscera is driven through them, and a hernial tumor is formed. Certain parts of the abdominal walls, especially the inguinal and crural rings, and the umbilicus, being weaker than others, offer the most frequent opportunity for hernia. In some instances hernia is congenital, as from abnormal deficiency of the walls; in other cases, it may arise at any period of life as a result of violent bodily exertion. Sex, age, and occupation seem to have marked influence in predisposing to hernia. Men are far more liable (in about the proportion of four to one) to this disease than women; though they are less so to those forms of the affection known as femoral and umbilical hernia. According to Malgaigne, in France, one man in 13 and one woman in 52, are subjects of hernia. In respect of age, he found that the liability is least about the age of 13 years (1 in 77), after which it progressively increases until the close of life, rising at 70-75 years to 1 in 3.

A hernia is almost always composed of *a sac* and *its contents*. The sac is a portion of the peritoneum (q.v.) corresponding to the aperture at which the hernia protrudes. It is pushed forward by the protruding viscera, and forms a pouch. The contents vary greatly, but consist generally of a portion of the small intestine (particularly of the ileum), forming the variety of hernia known as *enterocele*. Omentum is often found in hernial sacs, together with intestine. Besides the viscera, the sac always contains a certain quantity of fluid secreted by its interior. Hernia is divisible (1) into *reducible*, or returnable into the abdomen, *irreducible*, and *strangulated*; and (2) according to its situation, into *inguinal*, *crural*, etc.

The treatment of reducible hernia may be either palliative or radical. The palliative treatment consists in the application of a truss (q.v.) to retain the protrusion within the cavity of the abdomen. Each particular kind of hernia (femoral, crural, etc.) requires its special form of truss; and before applying it, the hernia must be reduced by placing the patient on his back, relaxing the muscles by bending the thigh upon the abdomen, and pressing the tumor back in the proper direction. The truss should then be put on, and should be worn during the whole of the day; and if the patient will submit to wear it (or a lighter one) during the night, so much the better. The means that have been contrived to effect a radical cure are too purely surgical for description in these pages. Below the age of puberty, and if the hernia is recent, a radical cure is sometimes effected by wearing the truss for two or three years.

In irreducible hernia the protruded viscera cannot be returned into the abdomen, but there is no impediment to the passage of their contents or to their circulation. In these cases, the patient is often liable to dragging pains in

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the abdomen, and to attacks of vomiting, in consequence of the movements of the stomach being checked by the omentum or intestines being fixed. There is also constant danger of this hernia passing into the strangulated form. The treatment may be either palliative or radical. The palliative treatment consists in the employment of a truss with a hollow pad that shall embrace the hernia, and prevent any additional protrusion. A radical cure may *sometimes* be obtained by keeping the patient in the recumbent position, and on very low diet, for two or three months: at the same time keeping the bowels open by laxatives and injections, and maintaining equable pressure over the tumor.

Hernia is said to be strangulated when a portion of intestine or omentum that is protruded is so tightly constricted that it not only cannot be returned into the abdomen, but has its circulation arrested. This form is highly dangerous, because, if relief is not speedily afforded, the strangulated part becomes gangrenous. The causes of strangulation are various, but this condition most commonly arises from a sudden violent effort, by which a fresh portion of intestine is driven into a pre-existing hernia, which it distends to such a degree as to produce this complication. The most prominent early symptoms are flatulence, colicky pains, etc. They are succeeded by vomiting first of the contents of the stomach, then of mucus and bile, and lastly of fecal matters, owing to inverted peristaltic action. If relief is not obtained, the inflammation that commences in the sac extends to the peritoneum, and the ordinary signs of peritonitis appear. After a variable time, comes gangrene or mortification of the part, and the patient speedily sinks.

The surgeon first tries to return the intestine, as in the preceding cases. This manipulation, termed the taxis, may be assisted by the internal use of chloroform, inhaled till it produces complete relaxation of the muscle, by general bleeding to the verge of faintness, by the hot bath, etc. If this fails, he must have recourse to the knife to divide the constriction.

HERNÖSAND, *hër'nö-sánd*: town of Sweden, cap of a län of the same name, on the w. side of the island of Hernö, near the mainland and connected with it by bridges. It is the seat of a Rom. Cath. bp.; contains a cathedral, public library, public baths, printing establishment, engine-works, lumber-yards, saw-mills, linen-mills, and various manufactories; exports tar and linen goods; imports salt, corn, wine, and manufactured goods; has a fine harbor and considerable fishery trade; was founded 1584 and received town privileges 1587. Pop. (1890) 5,789.

HERO, n. *hër'rō*, HE'ROES, n. plu. *-rōz* [OF. *heroë*, a demigod—from L. *herōēm*, a hero—from Gr. *hērōs*, a demigod, a hero: F. *héros*, a hero: comp. Fin. *uros*, an adult male, a brave man]: a man who evinces remarkable intrepidity, enterprise, or courage in matters connected with danger or suffering (see HEROES): the principal male character in a poem or tale. HEROINE, n, fem. *hër'ō-în*

HERO—HEROD.

[**F.** *heroïne*—from mid. L. *hērōinā*; Gr. *hērōinē*, a demi-goddess, a heroine]: a female hero; a brave woman; the principal female character in a story. **HEROIC**, a. *hē-rō'ik*, or **HEROICAL**, a. *hē-rō'ī-kāl*, pertaining to a hero or heroes; brave; magnanimous. **HERO'ICALLY**, ad. *-lī*. **HEROI-COMIC**, a. *hē'rō-ī-kīm'ik*, or **HE'ROI-COMICAL**, a. *-ī-kōm'ī-kāl*, consisting of the heroic and the ludicrous; serio-comic. **HEROISM**, n. *hēr'ō-izm*, the quality or character of a hero; bravery; valor. **HE'ROSHIP**, n. the character of a hero. **HERO-WORSHIP**, *-wēr'shīp*, extravagant admiration of great men. **HEROIC AGE**, the age when heroes, or the supposed children of the gods, are fabled to have lived. **HEROIC VERSE**, that verse in which the life of a hero is celebrated; epic poetry; the *heroic verse* in English consists of the iambic of ten syllables, and in classic poetry the hexameter (see **METER: VERSE**).—**SYN.** of 'heroic': noble; intrepid; enterprising; illustrious; bold; fearless; courageous; undaunted; valiant; gallant; daring.

HERO, *hē'rō*: legendary priestess of Venus, celebrated for her love for Leander. At a festival of Venus and Adonis, at Sestos on the Thracian coast, H. and Leander first saw each other, and were inspired with a mutual passion. H.'s position as a priestess, and the will of her parents, opposed their union. Undaunted by these obstacles, Leander every night swam across the dangerous Hellespont to visit his beloved, who directed his course by placing a burning torch on a tower on the sea-shore. On one tempestuous night, the torch was blown out, and Leander, unguided, was drowned and cast on shore at the foot of the tower, where H. anxiously awaited him. At the sight of the body, she threw herself from the tower. Virgil and Ovid refer to this tale. A poem has come down to us under the name of Musæus, in which this story is sung; Schiller likewise has made it the subject of a beautiful ballad.

HE'ROD THE GREAT, King of the Jews: abt. B.C. 74–4 (reigned B.C. 40–4); second son of Antipater, who was made procurator of Judæa by Julius Cæsar, B.C. 47; of a family which rose to power in Judea during the period which immediately preceded the complete destruction of the Jewish nationality. The family was of Idumean descent; but, though alien in blood, was Jewish in religion, the Idumeans having been conquered and converted to Judaism by John Hyrcanus B.C. 130. At the time of his father's elevation, H., though only 15 years of age, was made gov. of Galilee, and afterward of Cœle-Syria; and finally, he and his elder brother were made joint-tetrarchs of Judea; but he was soon displaced by Antigonus, representative of the Asmonean dynasty, and forced to flee to Rome, where he obtained, through the patronage of Antony, a full recognition of his claims, together with the title king of Judea, B.C. 40. Several years elapsed, however, before he succeeded in establishing himself in Jerusalem. On the fall of Antony, he managed to secure a continuance of favor from Augustus, from whom he not only obtained a con-

HEROD AGRIPPA—HERODIANUS.

firmation of his title to the kingdom, but also a considerable accession of territory, B.C. 31. From this time till his death, his reign was undisturbed by foreign war; but it was stained with frightful cruelties and atrocities. Every member of the Asmonean family, and even those of his own blood, fell in succession a sacrifice to his jealous fears; and in the latter years of his life, the lightest shade of suspicion sufficed as the ground for his wholesale butcheries, which are related in detail by Josephus. Of these, the one with which we are best acquainted is the slaughter of the infants at Bethlehem. The one eminent quality by which H. was distinguished, was his love of magnificence in architecture, and the grandeur of the public works executed under his direction. Even by these, however, he alienated the Jews, who ascribed them all to his Gentile leanings, and to a covert design of subverting the national religion. H. married ten wives, by whom he had fourteen children. His life of pride was ended by a loathsome disease.

HER'OD AGRIP'PA I: see AGRIPPA, HEROD I.

HER'OD AGRIP'PA II: see AGRIPPA, HEROD II.

HEROD ANTIPAS, *hě-rōd ăn'ti-pas*: Tetrarch of Galilee and Peræa (ruled B.C. 4–A.D. 39); son of Herod the Great by his wife Malthace, a Samaritan. He divorced his first wife, daughter of Aretas, King of Arabia Petræa, in order to marry Herodias, wife of his half-brother Philip, a crime against which John the Baptist remonstrated, and was in consequence put to death. It was during a visit of H. Antipas to Jerusalem for the purpose of celebrating the passover, that our Lord, as having been a resident of his tetrarchate, was sent before him by Pilate for examination. At a later time, he made a journey to Rome, in the hope of obtaining the title of king; but he not only failed in this design, but, through the intrigues of H. Agrippa, was banished to Lugdunum (Lyon), where he died in exile.

HERODIANS, *hě-rō'di-anz*: class of Jews variously regarded as a religious sect and as a political party. Some authorities claim that they were mostly Sadducees who preferred the tyranny of the Herods to that of the Romans; while others assert that they favored the Roman govt. and opposed the Jews, who were hostile to it. Some have deemed them a separate Jewish sect who regarded Herod the Great as the Messiah; of this there is no proof. The Pharisees took counsel with them how they might destroy Jesus (Matt. xxii. 16; Mark iii. 6; xii. 13).

HERODIANUS, *he-rō-dī-ā'nūs*, or HERODIAN, *hě-rō'di-an*: supposed A.D. 170–240; b. Greece: historian. He is believed to have passed the greater part of his life in Rome and been somewhat identified with political affairs; but no records of his life have been preserved beyond the few personal notes in his history of Rome. This covers the period 180–238, from the death of Marcus Aurelius to the accession of Gordianus III., deals with the events of the reigns of 17 emperors, is written in 8 books in the Greek language and after the style of Thucydides, and is generally accepted as

HERODOTUS.

an impartial narrative. Editions of the history were published 1789–1805, 1816, 26, and 55.

HERODOTUS, *hē-rōd'o-tūs*: the oldest Greek historian; usually styled the 'Father of History': abt. B.C. 484–abt. 424; b. at Halicarnassus, in Caria. He appears to have early resolved to write a historical work on an extensive scale, and with this view determined to visit and observe the most remote countries and nations. Although the dates and extent of his travels are involved in obscurity, and sometimes even in contradictions in the ancient narratives, we gather from his own statements that in his early youth he visited the islands and coasts of Asia Minor; that subsequently he gave particular attention to Egypt, at that time little known; that he next visited Palestine and Phœnicia; and finally penetrated as far e. as Babylon and Susa. We are informed also that he sailed through the Hellespont into the Black Sea, and visited all the countries on its shores. After his return he appears to have resided for a time at Athens. He speaks of having seen the *Propylæa*—i.e., the entrances to the Acropolis, which were not finished till the outbreak of the Peloponnesian war (B.C. 431). He also interested himself warmly in the politics of his native city, was instrumental in delivering it from the tyranny of Lygdamis, a vassal of Persia; but being what we should call 'a moderate liberal,' he had the misfortune to offend the extreme or popular party, and in consequence withdrew to Thurii, in Italy, whither many of his fellow-citizens had previously proceeded. Here, in all probability, he wrote his immortal work in the decline of his life. Lucian, a mediocre authority on such a subject, states that about B.C. 456 he read the nine books before the Greeks assembled at the Olympic games, but this is contradicted by the numerous allusions in the History to incidents of later occurrence—for example, the revolt of the Medes against Darius Nothus (B.C. 409–408). The statement of Pliny, that it was composed in his old age at Thurii, is the most probable, and best agrees with the unfinished programme of the work and its abrupt termination, as if the author were prevented by death from finishing it as he intended. According to Suidas, he died and was buried at Thurii about B.C. 408: as to place this accords with the predominant testimony of antiquity; but the date is probably about 16 years too late.

The purpose of H. in his History is to describe the great war between the Persians and the Greeks—the struggle for supremacy between Europe and Asia, between civilization and barbarism, between freedom and despotism. H., wishing to indicate that the antipathy between the two was not the result of any accidental quarrel, but of a deep-rooted difference of character, traces it back to the mythical ages. This was the only way in which a man in his time could express what we mean when we speak of the differences of *race*. In the course of his History, he gives an account of the various countries which he had visited. Wherever he gives the results of his own observations and inquiries, he evinces wonderful accuracy and impartiality; and when he

HEROES—HERON.

is not an eye-witness, he has been understood to say so. His credibility was suspected by Blakesley, and mercilessly impugned by Weidemann; recently Sayce, in his *Herodotus* (1883), affirms him to have plagiarized largely, and to have professed to visit places that he never saw—places, in fact, which did not in his time exist. He was in any case eminently uncritical, and had no place in his mind for the philosophy of history. His credulity and natural love of effect may invalidate some of his statements about remote periods, concerning which he trusted to others; but they detract but little from his trustworthiness in dealing with later periods which formed his special subject. Certainly as a *writer* of history, the charm of his work is perennial and undisputed. H. wrote in the Ionic dialect, but Attic, Doric, and epic forms occur in his work. The style is marked by an easy grace and lively vigor, by simplicity, freshness, and naturalness. The first edition (in Latin) by Laurentius Valla, appeared at Venice 1474; the first in the original Greek at Venice 1502. The chief modern editions are those of Schweighauser (1806), Gaisford (1824), Bähr (1834,61), Abicht (1869), Stein (1871). School editions are those of Matthiæ (1825), Bekker (1833,45); G. Long (1830), and Negris (1834). A variety of translations of the writings of H. have been published, as well as of historical and geographical treatises calculated to facilitate the study of the celebrated historian.

HEROES: in the Homeric period, the kings, princes, generals, leaders, all brave warriors, and men who excelled in strength, courage, wisdom, and experience. Many of these had, on account of such qualities, a fabled origin, half human, half divine, and were honored, after their death, with a kind of inferior worship. These heroes and demigods were recognized as the special patrons or protectors of particular countries and cities, and to them were raised temples and altars. These examples of heroic character, held up constantly to the admiration and imitation of peoples, tended to strengthen their peculiar character, and to impress them with the greatness and glory of courage, contempt of danger, and nobility of purpose. Poetry exalted the heroic sentiment to sublimity; and poems which celebrated the deeds of heroes, are themselves termed heroic. The imaginary time when heroes and other semi-divine beings lived on earth was called the **HEROIC AGE**: see **AGES**.

HERON, n. *hēr'ūn* [F. *héron*; OF. *hairon*, a heron—from mid. L. *airōnem*, a heron: AS. *hragra*; Sw. *häger*, a heron—probably from the harsh cry of the bird: W. *cregyr*, a screamer, a heron]: a large long-legged fowl living on fish. **HERONSHAW**, n. *hēr'ūn-shaw* [OF. *heronçeau*; Eng. *heron*, and Scot. *shaw* or *schaw*, a wood]: a heron; the schaw or wood where herons breed. **HER'ONRY**, n. *-rī*, a place where herons breed.

HERON.

HER'ON (*Ardea*): genus of birds, of the order *Gratitiores*, tribe *Cultrirostres*, and family *Ardeide*. This family includes also Bitterns, Night Herons, Spoonbills, Boatbills, Storks, Adjutants, Ibises, etc (see these titles). The bill is long, compressed, and sharp; tail short; legs and toes are long and slender; wings long. In the herons—in which genus are included the species commonly designated EGRETS (q.v.), which differ only in unimportant particulars of plumage—the bill is slender, but strong, forming a compressed and lengthened cone; the plumage is beautiful, but seldom exhibits very gay colors; white, brown, black, and slate color, finely blended, being generally predominant. The body is small in proportion to the length of the neck and limbs; the neck is long, and, except in flight, is usually held curved. In flight, the H. carries the neck, head, and long bill in a straight line before the body, and the long legs in like manner stretched out behind. Herons feed mostly on fish, frogs, and other aquatic animals; and may be seen particularly very early in the morning and late in the evening, standing patiently motionless in some shallow water, at the margin of a lake or stream, or on the sea-shore, waiting till prey come within reach. In default of their more common food, however, herons sometimes prey on young birds, reptiles, and the smaller mammalia. They usually go forth singly in quest of prey, but are mostly gregarious in their nidification.—The COMMON H.



Common Heron (*Ardea cinerea*).

(*A. cinerea*) is about three ft. in length from the point of the bill to the end of the tail. It is of delicate gray color on the upper parts, except the quill feathers, which are black, and the tail, which is deep slate color. The Common H. generally builds its nest in a high tree, and many

HERON—HEROPHILUS.

nests are sometimes seen in a single tree. Pennant tells us that he counted 80 in one oak in Lincolnshire. In very northern parts of the world, the H. is known only as a summer bird-of-passage, but it remains in Britain all the year. Its geographical range extends over most parts of Europe and Asia, and includes n. Africa. The H. was formerly in great esteem for the table, though now disregarded; it was also the kind of game most of all pursued in falconry. The PURPLE H. (*A. purpurea*) is a smaller and much rarer species, having a great range in the old world.—The GREAT WHITE H., or GREAT EGRET (*A. alba*), a mere accidental visitor of w. Europe, is more common in Turkey, Greece, etc., and in some parts of Asia. It is extremely beautiful, with perfectly white plumage, much of it loose and flowing.—The LITTLE EGRET (*A. garzetta*) also has white flowing plumage. It is only about two ft. in length. The largest species of Egret, *A. occidentalis*, is thus far known only in Florida and Cuba; it differs little from the Great Egret, *A. alba*, of the old world.—America has many species of H., most numerous in its warmer regions. The most common species in temperate N. America is the GREEN H. (*A. virescens*), the flesh of which is so much esteemed that it is often seen in the markets. Corresponding to the Common H. of Europe is the Great Blue H. of America, *A. herodias*, which exceeds the former in size. The largest of all herons is *A. goliath*, of Africa and Asia.

Heron and egret plumes, made of the long feathers, were in former times highly valued, being, in some countries, deemed an ornament fit for royal personages, or for the highest nobles.

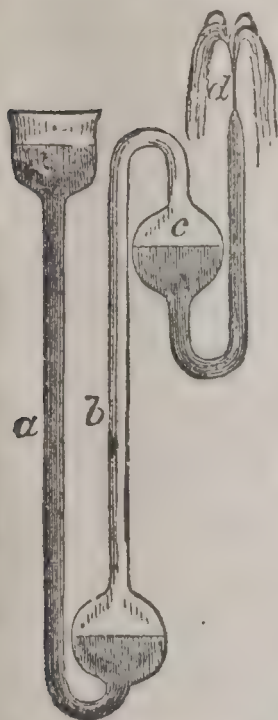
HER'ON, or HE'RO (commonly known as H. OF ALEXANDRIA): mathematician and natural philosopher: B.C. 281–224; pupil of Ctesibius. He constructed a great number of machines and automata—mostly, however, as toys, among which are *Hero's Fountain* (q.v.): a *steam-engine* on the principle of Barker's mill (a vessel being caused to revolve by jets of steam issuing from lateral holes in the arms with which it is provided); a double forcing-pump used for a *Fire-engine* (q.v.), and various other similar applications of air and steam. It is but recently that the remarkable claims of H. to such discoveries have received any notice, for in the valuable work of M. Dutens, entitled *L'Origine des Découvertes attribuée aux Modernes*, the name of H. is not even mentioned. Among his works which have come down to us in fragments is *Pneumatika*, his most valuable work, in which the above mentioned machines and many others are figured and described. The best edit. of his works is in *Veterum Mathematicorum Opera* (Paris 1693).

HEROÖP'OLIS: see SUCCOTH.

HEROPHILUS, *hē-rōf'ī-lūs*: one of the greatest physicians of antiquity: b. at Chalcedon, in Bithynia; living B.C. 4th and 3d c. He settled at Alexandria, and distinguished himself by his devotion to anatomy, said to have been car-

HERO'S FOUNTAIN—HERPETOLOGY.

ried to such an extent that he dissected criminals alive. Several names which he gave to different parts of the body are still in use, as the 'Torcular Herophili,' the 'Calamus scriptorius,' and the 'Duodenum.' H. placed the seat of the soul in the ventricles of the brain. Of his writings, only a few fragments remain, collected and published in a dissertation *De Herophili Celeberrimi Medici Vita, scriptis, atque in Medicina Meritis* (Gött. 1840).



HERO'S FOUNTAIN: pneumatic apparatus invented by Heron (q.v.) or Hero, through which a jet of water is supported by condensed air. A simple mode of constructing it by means of glass tubes and a glass-blower's lamp is shown in the annexed figure. The column of water in the tube *a*, compresses the air in *b*; this presses on the surface of the water in *c*, and causes it to gush out at *d*.

HEROSTRATUS, *hē-rōs'tra-tūs*: an Ephesian, who, from a desire of future fame, set fire to the magnificent temple of Diana, B.C. 356. He expiated the deed

by a painful death; and, by a decree of the Ionians, capital punishment was to be inflicted upon any one who should mention his name; a decree which produced an effect directly the reverse of what had been intended. The temple is said to have been fired on the night that Alexander the Great was born.

HERPES, n. *hēr'pēz* [Gr. *herpēs*, a spreading eruption on the skin—from *hērpō*, I creep along: F. *herpes*]: disease of the skin characterized by vesicles, sometimes as large as a split-pea, occurring in clusters on an inflamed base, and ending in desquamation, after a few days or weeks. In herpes zoster, or zona, the largest and most marked variety of the disease, there is the additional peculiarity, that it extends in patches around one side of the body, usually passing sharply up to the middle line, but not beyond it either before or behind. Herpes phlyctænodes, zoster, labialis, præputialis, circinatus, are the varieties of this disease most commonly met in practice. The treatment is by soothing and cooling applications; there is no danger; but the smarting during the eruptive period, and the itching afterward, are often very distressing to the patient, and may be somewhat relieved by the application of cold cream, and other simple soothing external applications. **HERPETIC**, a. *-pēt'ik*, creeping; spreading; of or resembling herpes.

HERPETOLOGY, n. *hēr'pē-tōl'ō-jī* [Gr. *herpēton*, a reptile; *logos*, discourse]: branch of natural history which treats of reptiles. The Batrachians or Amphibia having, till recently, been included by naturalists generally—as they still are by many—in the class of reptiles, the science

HERRERA—HERRERA Y TORDESILLAS.

of H. may be regarded as including the study of them. H. received a share of attention from the naturalists of antiquity and the earlier naturalists of modern times. The name most deserving of notice in connection with it before the time of Linnæus is that of Ray. In the end of the 18th c. and beginning of the 19th, H. received special attention from Lacépède, Brongniart, Latreille, and Daudin, all of whom, as well as Cuvier, contributed greatly to its progress. More recently, it has been much advanced by the labors of Schlegel, Fitzinger, J. E. Gray, Müller, Owen, etc. The work of Spix on the *Reptiles of Brazil* is one of the most important contributions. Bell's *History of British Reptiles* (Lond. 1839) contains a very full account of all the British species, including the Batrachians. H. derives great additional interest from the numerous fossil remains of reptiles of former geological periods, and from the great size and extraordinary characters of many of them. HERPETOLOG'IC, a -pēt'ō-lōj'ik, pertaining to. HERPETOL'OGIST, n. -jīst, one versed in.

HERRE'RA, FERNANDO DE: 1534–1597; b. Seville: Spanish poet. When advanced in life he took orders as a priest. He was master of Greek, Roman, and Italian literatures, and was a man of prodigious learning. As a poet he ranked so high in the opinion of his contemporaries, that they bestowed upon him the appellation the *divine*. Many of his erotic poems are remarkable for tender feeling; while his odes frequently display a lofty enthusiasm, but the expression is cast in too classical a mold, and consequently wears a certain air of artificiality. His *Obras en Verso* (1582) were republished in the *Coleccion* of Ramon Fernandez (1786; new ed. 1808). His chief historical work is the *Relacion de la Guerra de Chipre* (1572); and he translated from the Latin of Stapleton a life of Sir. T. More.

HERRER̄A, FRANCISCO, EL VIEJO, i.e., the Elder; 1576–1656; b. Seville: one of the most eminent Spanish painters of the school of Seville. His drawing was bold and spirited; for which reason he may be regarded the founder of a new and more national school. His *Last Judgment* is a master-piece of drawing and coloring: *Holy Family*, and *Outpouring of the Holy Spirit*, also are much esteemed. The cupola of the church at Sta. Bonaventura displays his skill in fresco-painting. He died at Madrid. Some of his best works are in the Louvre at Paris.—His youngest son, FRANCISCO HERRERA, EL MOZO (the Younger), 1622–85; b. Seville; studied under his father, and afterward went to Rome, where he became so celebrated for his fish-pieces, that he received the surname of *Il Spagnuolo degli Pesci*. After his father's death, he returned to Spain, where he painted church-pictures, domes, etc. He died at Madrid.—There have been several other artists of the same name of less note.

HERRERA Y TORDESILLAS, ěr-rā'rā e tor-dā-sēl'yās, ANTONIO DE: 1549–1625, Mar. 29; b. Cuellar, province of Segovia, Spain: historian; whose works, though not entirely well-arranged, are on the whole accurate and indispensable

HERRICK—HERRING.

to a knowledge of the early Spanish American colonies and the aboriginal American peoples. His principal work is the *Historia general de los Hechos de los Castellanos en las Islas y Tierra Firme del Mar Oceano*, 1492-1554 (1601-15), afterward published with continuations by Andr. Gonzalez de Barcia (1728-30). His *Descripción de las Indias occidentales* (1601, 15) forms an introduction to the above work. His other works are the *Historia del Mundo en el Reynado del Rey D. Felipe II.* (1601-12); *Commentarios de los Hechos de los Españoles, Franceses y Venecianos en Italia*, 1281-1559 (1624); and the *Historia de Portugal y Conquista de las Islas de los Açores*, 1582 y 1583 (1591). He died at Madrid.

HERRICK, *hēr'ik*, **ROBERT**: 1591-1674, Oct.; b. in Cheapside, London: poet. He was educated at Cambridge, took his degree 1616, and became M. A. 1620; and 1629 was presented to the vicarage of Dean Prior, Devonshire. He had been, probably before 1613, the ornament of a circle of wits and dramatists in London. Ejected from his parish by the Long Parliament 1648, he repaired to London and published two volumes of poems, *Hesperides* and *Noble Numbers*. On the restoration of Charles II., he was reinstated in his old living, where he died. His sermons are said to have been 'florid and witty.' His poems, numbering 1,300, all short, and all lyrical, are graceful and melodious, and show much fine fancy. They vary in subject from amatory verses, sometimes indelicately expressed, to pieces of deep religious feeling. There is much rubbish; but H. stands unrivalled in his limited sphere of pastoral lyrical poetry. Such songs as *Cherry Ripe*, and *Gather the Rosebuds while ye may*, are universally known. The most complete edition of his works is that by the Rev. A. B. Grosart (London 1876).

HERRING, *n. hēr'ring* [F. *hareng*; OF. *harenc*; Ger. *haring*; AS. *hæring*, a herring—from AS. *here*; Ger. *heer*, a host, an army]: a well-known sea-fish. **KING OF THE HERRINGS**, a cartilaginous fish which follows shoals of herring, allied to the sturgeon; the chimæra. **HERRING-BONE**, applied to a kind of cross-stitch in seams; in *masonry*, when the stones are laid aslant instead of being bedded flat. **HERRING SILVER**, formerly, a sum of money paid instead of supplying a religious house with a certain number of herrings.

HERRING (*Clupea harengus*): fish of the malacopterous family *Clupeidae* (q. v.); one of the most important of fishes to mankind. The genus *Clupea* is distinguished from other, of the same family chiefly by the fins and by the teeth which are small and numerous, and are situated not only on the jaws, but in other parts of the mouth, as the *vomer* (middle line of the palate) and the tongue. The H. is found in northern seas, but more abundantly in temperate than arctic regions. The opinion formerly held, that its proper home is within the Arctic circle, and that its vast shoals issue thence at certain seasons, migrating southward, and spreading themselves along the northern coast of Europe and America, is now utterly discarded; and the H. is be-

HERRING.

lieved to be an inhabitant of deep water, from which, at certain seasons, it approaches the shores, probably never migrating to any great distance. The young are abundant in the shallow water near the shores at seasons when the parent fish are absent. The H. seems always to deposit its spawn in comparatively shallow water, and is said to be very indifferent whether the spawning ground be sandy, rocky, or covered with submarine vegetation. Certain localities, however, have the reputation of being favorite spawning-grounds. When the great annual shoals of herrings appear on the coasts, they generally swim near the surface of the water, and are followed by multitudes of larger fishes, as hakes, dog-fishes, etc., which prey on them; great numbers also fall a ready prey to gulls and other sea-birds, which congregate for the occasion. The food of the H. is believed to consist chiefly of minute crustaceans and *acalephæ*; but it feeds also on small fishes, not scrupling to devour even the young of its own species. Herrings are sometimes, though rarely, caught on the lines set for other fishes, and by persons angling from the shore; they are readily caught by means of a lure made of a white feather, which swims at the depth of some yards, the point of the fishing rod being kept a yard or two below the surface of the water, the angler being in a boat which is in motion. The immense multitudes of herrings annually taken by the net cause no apparent diminution of their abundance, the destruction being compensated for by prodigious fecundity; more than 68,000 eggs have been counted in the roe of a single female. But herrings, without any apparent cause, often desert parts of the coast where for a time they have been remarkably abundant, not returning again in plenty for a number of years. This has sometimes been popularly ascribed to steamboats. For recent observations and experiments as to the fertilization of herring ova, see *Nature*, XXIX. 538. The size of the shoals of herrings is often enormous, and they have sometimes even been driven ashore in far greater quantities than the inhabitants of the neighborhood could find means of curing. In some instances the water as the tide came in, has been so full of herrings, that half-a-dozen could be taken out at one dip of a basket; and the retiring tide left them stranded in vast numbers.

There is evidence that the herring-fishery has been prosecuted in England since the beginning of the 8th c., and in Normandy since the 11th; and it is probable that in both cases the beginning was at an earlier date. The prosperity of Holland has been in a great measure due to the herring-fishery, and the Dutch engaged in it with great eagerness, and carried it on even on the British coasts, when it was comparatively neglected by English and Scotch.

The H. of the European and N. American coasts are of the same species.—The seas of other parts of the world produce a number of other species of the genus *Clupea*, as now restricted by ichthyologists.

The fishes popularly called *Freshwater Herrings* are *Salmonidæ* of the genus *Coregonus* (q.v.), to which belong also the *Herring Salmons* of the N. American lakes and rivers.

HERRING—HERRING-FISHERY.

All are esteemed for the table. See Huxley in *Nature*, 1881.

HER'RING, VANCOUVER ISLAND (*Meletta cœrulea*): fish of the same family with the herring, and much resembling it in appearance and otherwise. The genus *Meletta* differs from *Clupea*, to which the herring belongs, chiefly in having no teeth, except that name may be given to a rough band on the tongue. The Vancouver Island H. abounds on the n.w. coast of N. America. It is generally about ten inches in length. Its color is bright steel blue, shading away on the sides to brilliant silvery white, the fins yellowish white. Immense shoals appear on the coast at different seasons from Feb. to July; often pursued by dogfish, so that fleeing from the enemy, they even rush upon the shore, where great numbers die among the pebbles. They afford a chief part of the sea-harvest of the Indians, who take them by various means—by the rake, such as is used for the Candle-fish (q.v.), for the shoals often so fill the water that it may be employed; by hand-nets; and by long dams of lattice-work, along the outside of great mud-flats left dry by the retiring tide. The spawn of this fish is also favorite food of the Indians, and is obtained by placing great quantities of fir branches in the mud over the flats, within the dams used for catching the herring. The spawn gets entangled among the branches, and is removed to be dried in the sun. Great numbers of the herring caught by the Indians are used only for extraction of oil. The Vancouver Island H. seems likely to acquire great commercial importance.

HER'RING-FISHERY: industry of great importance on the northern coasts of America and Europe. It is carried on all the year round, there being both a winter and summer fishery; but the largest quantity of fish are caught in Aug. and Sep.—See FISHERY.

The common mode of capturing herrings is by a set of large nets joined together, known among fishermen as a 'drift.' These nets, held together by a back-rope, are let into the water in a straight line, and are kept perpendicular by a number of bladders or cork floats, balanced by a few slight weights of lead. Each single net is composed of fine twine worked into meshes of an inch square, and is 50 yards long and 33 ft. in depth. These nets, now woven by machinery, were formerly made by the fishermen's families. Each boat has a train that extends nearly a mile in length. Another mode of fishing, sometimes used, known as 'trawling,' is in reality fishing with a 'seine'-net.

The herring, generally considered the most important of food fishes, is distributed through the whole of the North Sea and the Atlantic, and the annual catch is estimated at 3,000,000,000, with a weight of at least 1,500,000,000 lbs. In 1874 Prof. Hind reported the catch that year in the waters of British N. America at 200,000,000 lbs., and official reports show that nearly 43,000,000 pounds were obtained on the e. coast of the United States alone in 1880. The herring was one of the most conspicuous fishes in the

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w. Atlantic at the time of the discovery and early exploration of America, and amusing reports were made concerning it by navigators as early as 1631. It is found in the temperate and colder parts of the North Atlantic. On the w. its range extends s. to Sandy Hook, where it is found occasionally in mid-winter; and on the n. as far as northern Labrador, perceptibly decreasing in number toward the n. extreme. On the e. its s. limit is in the vicinity of the Bay of Biscay, while n. it is found in the White Sea and on the s. shores of Spitzbergen. Though abundant in the North Sea and in the Baltic, it does not enter the Mediterranean. On the coast of the United States it is not known to enter water in the least degree brackish, except occasionally in the spawning season in St. Andrews' Bay. As far as is known, the abundance of herring in the w. Atlantic has been constant during the two past centuries. It spawns in the Bay of St. Lawrence in the spring, and spring spawning grounds are thought to exist in the Bay of Fundy, St. Andrews' Bay, and parts of Passamaquoddy Bay as well. The spawning season advances as one goes w. and s. The capture of herring is forbidden in the prov. of New Brunswick June 15—Sep. 15; the spawning season is at its height off New Brunswick and Nova Scotia at the beginning of Aug.; it occurs off Me. in Sep.; e. Mass. Oct.; Cape Cod, Nov. No-Man's Land and Block Island, Dec.; and probably later further s. Owing to the great supply of other excellent food fishes in the United States, much less attention is paid to the capture of herring for food here than in Europe. By far the greatest consumption is in the shape of so-called 'sardines,' packed mostly in cotton-seed oil and in cans made in imitation of those imported from France. This industry began 1875 and increased yearly till 1880, when the production amounted to 2,377,152 one-pound cans, worth \$772,176. Fresh and salted herring are used extensively for bait in the halibut and cod fisheries, and a special night-fishery for young herring or *sperling*, is carried on in the autumn with torches about Cape Ann, for the supply of the shore fishermen. A species of herring—the *clupea mirabilis*—is found along the entire length of the Pacific coast, and is especially abundant in the north. All the bays and outlets of Puget Sound are filled with it in summer. It is seldom seen s. of Point Conception except in winter. It spawns in San Diego Bay in Jan.; is abundant in San Francisco Bay in the spring; and further n. the season is later. A second species—the *clupea sagax*—known also as the Cal. sardine, is almost identical with the European sardine, ranges from Cape Mendocino to Chili, is migratory along the coast, and is extremely abundant in the bays of the south in winter and scarce in summer. In American waters the alewife, sprat, brit, anchovy, menhaden, ocean trout, whitefish, moss-bunker, and mountain trout are names, among others, applied to species of the herring family,

HER'RISON [Fr. *hérisson*]: in heraldry, the hedgehog, a charge allusively borne by families of the name of Harris.

HERRNHUT—HERSCHEL.

HERRNHUT, *hěrn'hút*: small town in the circle of Bautzen, kingdom of Saxony, about 50 m. e. of Dresden, pleasantly situated on the s. slope of the Hutberg, from which it takes its name. Pop. about 1,200. H. is noted throughout Germany for its fine and durable manufactures, particularly linen, japanned wares, and leather. It is remarkable also for the regularity and simplicity of its architecture, as are the inhabitants for cleanliness, simplicity of life and manners, and quiet deportment. H. was founded 1722 by a colony of persecuted Moravians, some of whom were descended from the old Bohemian and Moravian Brethren. On coming into Saxony, they were sheltered and protected by the pious Count Zinzendorf, to whom H. belonged. From this place the United Brethren, better known as Moravians (q.v.), have spread themselves over all parts of the world. The village of Berthelsdorf, about a mile from H., has been since abt. 1879, the seat of the directorate of the Moravian community.

HERS, *hěrz* [see **HER**]: 3d pers. pron. fem. poss. **HERSELF**, compound pers. pron. fem. added for the sake of emphasis, as *she herself*; in her ordinary character; female individual.

HERSCHEL, n. *hě'r'shěl*: the planet discovered by Sir William Herschel, now called *Uranus*: see **PLANETS**.

HERSCHEL, *hě'r'shěl*, CAROLINE LUCRETIA: astronomer: 1750, Mar. 16—1848, Jan. 9; b. Hanover; sister of Sir Frederick William H. (q.v.). She lived in Hanover till 1772, when she went to England to live with her brother at Bath. Her early education had been very deficient; later she had learned millinery and dressmaking that she might maintain herself. When William turned astronomer, she became his constant helper; and on his being appointed private astronomer to George III., she acted as his assistant, doing all the duties of an assistant astronomer, and in that character receiving a small salary from the king. While discharging her duties in this position, she found time for a series of independent observations with a small Newtonian telescope, made for her by her brother. Her special business was to sweep the heavens for comets, seven of which she discovered, in regard to five of which she has the credit of priority of discovery; and several remarkable nebulæ and clusters of stars included in Sir William's catalogues were described from her original observations. In 1798, she published, with introduction by her brother, *A Catalogue of Stars taken from Mr. Flamsteed's Observations*, etc. This valuable work, published at the expense of the Royal Soc., contained 561 stars omitted in the British catalogue. She lived with her brother during his whole career, sharing his labors and distinctions; and at his death returned to her native country. She was then 72 years of age, but she lived to be 98, retaining all her faculties to the last. In her last days, she was not idle. In 1828, the Royal Soc. conferred on her their gold medal for completing the catalogue of nebulæ and clusters of stars (2,500) observed by her brother. She was afterward chosen an honorary member of the

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Royal Society. In 1846 she received a gold medal from the king of Prussia. See her *Memoir and Correspondence* (1876).

HERSCHEL, *hér'shél*, Sir FREDERICK WILLIAM, D.C.L. (generally known as Sir William Herschel): illustrious astronomer: 1738, Nov. 15—1822, Aug. 23; b. Hanover; son of a musician who played the oboë in the band of the Hanoverian Guard. He was educated specially as a professional musician. In 1757 he went to England, was teacher of music in Leeds, whence he went to Halifax as organist, and subsequently (1766) in the same capacity to Bath. Here he seems first to have turned his attention to astronomy. Wanting a telescope, and unable to afford a reflector, he made one for himself—a Newtonian, of five ft. focal length, and with this applied himself to study the heavens. In 1781, he made his first discovery (*Philos. Trans.* 1780–1), being a new planet, which at first he took for a comet. It was detected by an exhaustive process of surveying the heavens, which H. was the first to follow, taking the stars in regular series, and examining them all in their groups through the same instrument. The result of his discovery was his appointment to be private astronomer to George III., with a salary of £400 a year. He then went to live at Slough, near Windsor, where, assisted by his sister Caroline (q.v.), he continued his researches. H. married Mrs. Mary Pitt, and left one son, John Frederick William H. (q.v.). Little is known of his private life. He was knighted by George III., and made D.C.L. by the Univ. of Oxford; he became rich partly through his wife's jointure, and partly through selling mirrors for reflecting telescopes. He died at Slough.

H. contributed 69 papers to the *Philos. Trans.* 1780–1815; and to vol. I. of *Mem. of the Astron. Society*, he contributed a paper, 'On the Places of 145 New Double Stars.' He greatly added to the knowledge of the solar system: he discovered Uranus and its six satellites, and two satellites of Saturn. Besides this, he detected the rotation of Saturn's ring, the period of rotation of Saturn itself and that of Venus, the existence of the motions of binary stars, the first revelation of systems besides our own. He threw new light on the Milky Way and the constitution of nebulae, and, in fact, his sublime speculation as to the construction of the stellar heavens, first brought to the human mind any conception of the immensity of the universe. His catalogue of double stars, nebulae, etc., and tables of comparative brightness of stars, and his researches in regard to light and heat, would of themselves entitle him to the first rank as an astronomer and natural philosopher. His absorbing devotion to his high pursuit, and his indomitable perseverance against all obstacles, led to achievements which make his name illustrious in the history of science. His sister's name must hold place with his. For a notice of H.'s telescope, see TELESCOPES. He erected one immense telescope of 40 ft. length: it was begun 1785, finished 1789, in which year he by means of it detected the sixth satellite of Saturn. See H.'s *Life and Works*, by E. S. Holden, 1881.

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HER'SCHEL, Sir JOHN FREDERICK WILLIAM, Bart., D.C.L.: illustrious astronomer: 1792–1871, May 11; b. Slough, Bucks; only son of the astronomer, Sir Frederick William H. (q.v.). He was educated at St. John's, Cambridge, where, 1813, he became senior wrangler and first Smith's Prizeman. His first publication was *A Collection of Examples of the Application of the Calculus of Finite Differences* (1820). In 1822, he applied himself especially to astronomy, using his father's methods and instruments. For a time, he worked with Sir James South in re-examining the nebulae and clusters of stars described in his father's catalogues. The results of the re-examination were given 1833 to the Royal Soc. in the form of a catalogue of stars in order of their right ascension. The catalogue contained observations on 525 nebulae and clusters of stars not noticed by his father, and on a great number of double stars—in all between 3,000 and 4,000. This important contribution to science led to his being acknowledged as the worthy successor of his father; so early, indeed, as 1826, the Royal Soc. had voted to him and South a gold medal apiece for their observations on double stars; but by 1833 his pre-eminence was beyond the necessity of being marked by acknowledgments. His 'Treatise on Sound' had appeared in the *Ency. Metro.* 1830, and his 'Treatise on the Theory of Light' (in the same work) 1831, in which year also appeared in Lardner's *Cyclo.* his well-known 'Preliminary Discourse on the Study of Natural Philosophy,' not to mention his papers in the *Trans. Astron. Soc.* The Preliminary Discourse—one of the most charmingly written books on science in any language—contributed largely to his popularity. In 1836, appeared his 'Treatise on Astronomy' in Lardner's *Cyclo.* At this time, H. was at the Cape of Good Hope, where he arrived 1834, Jan., with the intention of completing the survey of the sidereal heavens, by examining the southern hemisphere as he had examined the northern. Here he established his observatory at a place called Feldhausen, six miles from Table Bay. 1834, Mar. 5, he commenced his observations; and in four years, working all the time at his own expense, he completed them. The public interest in his labors was very great; but though now and then gratified by partial statements of his results, it was not till 1847, nine years after his return from the Cape, that it received full gratification in the publication of a vol. of *Results of Astronomical Observations made during 1834–38 at the Cape of Good Hope; being the Completion of a Telescopic Survey of the whole Surface of the Visible Heavens commenced in 1825.* The results of these labors are invaluable. They are now incorporated into all books on astronomy. H., when at the Cape, gave an impulse to the science of meteorology, having the merit of having suggested the scheme for taking meteorological observations simultaneously at different places. In 1844, he published, under official military authority, a book of instructions for taking and recording such observations in southern Africa.

On his return to England 1838, honors were showered on him. He was made a D.C.L. of Oxford; on Queen Vic-

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tor's coronation, he was created a baronet; he succeeded the Duke of Sussex as pres. of the Royal Soc.; 1848, he became pres. of the Royal Astronomical Society. In 1849, he published *Outlines of Astronomy*. In 1850, he was appointed master of the mint. This office, on account of ill health, he resigned 1855. After his death appeared his *Catalogue of 10,300 Multiple and Double Stars*.

HERSCHELL, LORD FARRER: an English lawyer; 1837, Nov. 2—1899, March 1; b. in England; was graduated at London University, of which he afterward became chancellor; later studied at the University of Bonn; became a barrister of Lincoln's Inn, 1860; queen's counsel, 1872; bencher of Lincoln's Inn, 1872; recorder of Carlisle, 1873-1880; and solicitor-general, 1880-85. He was knighted in 1880; raised to the peerage and became lord high chancellor in 1886; and again lord high chancellor, 1892. In 1897 he was appointed a member of the Venezuela and British Guiana boundary arbitration tribunal. During the sitting of the commission in Washington, D. C., 1899, Feb., he had a severe fall, from the effects of which he died. A convey his remains to England, but the courtesy was British warship conveyed his remains to England.

HERSE, n., or HEARSE, *hěrs* [F. *herse*, a harrow—from OF. *herce*—from It. *erpicce*—from mid. L. *hīrpīcēm*, a harrow]: lattice or porticullis in the form of a harrow set with iron spikes for the reception of candles: thence a frame of light wood-work similarly set with spikes for candles, which was used at the ceremonies of the church, and set up over a corpse at funeral services. It was originally very simple in form, but in the 15th and 16th c. hersees of great splendor came into use, and were erected in the churches over the bodies of distinguished personages. The framework then was of iron or brass, sometimes of beautiful workmanship, square, octagonal, etc., in plan, with pillars at the angles, and arched framework above forming a canopy. The whole was hung over with rich cloths and embroidery, and lighted with hundreds of wax candles, and decorated with wax images. From this the transition to the modern funeral herse (see FUNERAL RITES) can be easily traced.

HERSFELD, *hěrs'fělt*: old town of Hesse-Nassau, n. Germany, on the left bank of the river Fulda, which here becomes navigable, 32 m. s.s.e. from the city of Cassel. The cathedral, built in the beginning of the 12th c., on the site of an older cathedral destroyed by fire, was itself set fire by the French 1761. Its remains form a picturesque ruin. There are extensive manufactures of woolen cloth and serge.

HERSHIP: old Scotch law term, denoting the offense of carrying off cattle by force.

HERSILLON, n. *hěrs'īl-ōn* [F.]: in *fort.*, beam, frame or plank set with spikes to stop a breach or way; a herse; a cheval-de-frise (q. v.).

HERTFORD, *hěrt'fěrd*, local *hār'fěrd*: municipal borough, market-town, and cap. of the county of the same name;

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on the Lea, 26 m. n. of London by rail. It contains few buildings of architectural importance, except two ancient churches; there are also a shire-hall, infirmary, corn exchange, and free library. H. has a grammar-school and several charity schools. There are linseed-cake mills and several malting and corn-mills in the town and vicinity. Here is held an important corn-market, and three annual fairs. Pop. (1871) 7,894; (1881) 8,556; (1891) 7,232.

The old castle of H. (scarcely a fragment remaining) was built about 905. It was strengthened and repaired about the Conquest. The present castle is of the time of James I.; and in the early part of the century it was used as a college for the students of the E. India Company's civil service. It now belongs to the Marquis of Salisbury, and is a private residence.

HERTFORDSHIRE, *hért'fêrd-shêr* or *hâr'fêrd-shêr*, or **HERTS**, *herts*: inland county of England, bounded e. by Essex, s. by Middlesex, w. by Buckingham and Bedford, n. by Cambridge; 405,141 acres; pop. (1881) 203,069; (1901) 258,045. The surface presents finely wooded hill and fertile valley. The chief elevations are those of the chalk downs, a branch of the Chiltern Hills, which skirt the north of the county. The principal rivers are the Lea and the Colne, affluents of the Thames. Chalk, at a greater or less depth below the surface, forms the basis of the soil, which is various, much of it however, a mixture of gravel and loam, with a tract of rich loam on the borders of Essex. The climate is mild and healthful. Agriculture has improved much of late years. Immense quantities of hay and straw are sold and sent to London. Throughout the county are numerous gardens and orchards, the fruit of which is sent to the London market. Great quantities of malt are made: Ware is the chief seat of the malting trade in the kingdom. Paper and straw-plait are extensively manufactured in the west and south. Four members are now returned to parliament for the county.

HERTHA, *hêr'tha*, or **HERTHUS**, *hêr'thÿs*, or **ÆRTHA**, *êr'tha*: one of the ancient German goddesses, from whose name doubtless is derived the modern German *erde* and English *earth*. Tacitus records her worship by the Suevi, and that her temple was on an island in the ocean. This isle of H. was long supposed to be the island of Rugen; but is now conjectured by some scholars to be Heligoland, and by others Zetland.

HERTOGENBOSCH, or **HERZOGENBOSCH**: see **BOIS-LE-DUC**.

HERTZ, *hêrts*, **HENRIK**: distinguished Danish poet: 1798, Aug. 25—1870, Feb. 25; b. Copenhagen; of Jewish parents. In 1832, he abjured Judaism, and joined the Prot. Church. His first appearance as an author was 1827, when he produced several clever vaudevilles and comedies, as *Kjerlighed og Politi*, *Hr Burchardt og hans Familje*, *Flyttedagen*, etc.; three years later, appeared his *Gjengangere* *eller poetiske Epistler fra Paradis*, which exhibited such wonderful powers of imitating the style and spirit of other

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writers, more especially those of his countryman Baggese., that public attention was at once arrested. Hitherto, he had written anonymously, but the masterly manner in which he had stigmatized the affectations and puerilities which had perverted the literature and criticism of the Danish press, produced a ferment in the literary circles of Copenhagen, which soon led to the discovery of the unknown writer. From this time his works followed in rapid succession; and in an entirely different path from the one on which he had first entered, he produced, 1837, a dramatic poem, *Svend Dyrring's Huus*, founded on an old heroic saga, which his countrymen deem his masterpiece; among Germans, however, his lyrical drama of *Kong René's Datter* (1854) is his most popular work. He has a place in the front rank of Danish lyrical poets.

HERTZEN (or HERZEN), *hért'sén*, ALEXANDER, 1812–1870, Jan. 21; b. Moscow: Russian author. In 1835, while yet a student, he was imprisoned for his political opinions, and banished. After 1842, he was permitted to reside at Moscow, under strict surveillance of the police, and applied himself exclusively to literary labors. After 1847, he resided some time in London. In his own country, H.'s life was one long petty persecution. H.'s literary performances are *Dilettantism in Science* (1842), *Letters on the Study of Nature* (1845–46), *Whose Fault is it?* and *Doctor Kroupof* (both in 1847), *Recollections of My Travels* (1848), *On the Development of Revolutionary Ideas in Russia* (1851), *Baptized Property* (1853), or 'Serfism,' *Prison and Exile* (1854), *My Exile* (1855), *Interrupted Tales* (1856), *France or England* (1858), *Memoirs of Catherine II.* (1859), *The Old World and Russia*, *The New Phase of Russian Literature* (1864). In 1865 he took up his residence at Geneva. H. had at one time an immense reputation as a political writer. He died in Paris.

HERULI, *hēr'ū-lī*, or ÆRULI or ERULI: warlike tribe of Germans known first as inhabiting the n. shore of the Euxine Sea. They joined the Goths in their incursions against the Danubian provinces of the Roman empire in the latter part of the 3d c.; were conquered by the Ostrogoths under Hermanric early in the 4th c.; accompanied Attila, King of the Huns, in his descent on Gaul; and after the defeat of the Huns established confederacies in the valley of the Theiss, on the lower Danube, and in Illyria. Subsequently they united with other German tribes, and under the leadership of Odoacer assisted in the overthrow of the Western empire 476. After a brief period of tribal prosperity and importance, they attempted to subjugate the Lombards, but the latter rose and nearly annihilated them 512. The survivors were dispersed and ultimately merged into other nations.

HERVEY, *her'vi*, JAMES: 1713, Feb. 26—1758, Dec. 25; b. Hardington, Northamptonshire, England: clergyman and author. He was educated at Oxford Univ., took holy orders 1737, was appointed curate to his father, and on his death 1752 succeeded to his livings of Weston Favel and

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Collingtree. While at Oxford he became intimate with John Wesley and familiar with Zimmerman's writings, and for a time inclined to their theology; but later adopted the Calvinistic creed and determined to adhere to the Established Church. He was author of numerous religious works, chief of which were *Meditations and Contemplations* (1746-7), *Remarks on Lord Bolingbroke's Letters on History* (1755), *Theron and Aspasia*, religious dialogues (1755) and *Letters to John Wesley* (posthumous). His writings, formerly popular with a class of religious readers, are now little read: they deal with sombre themes and though conceived in a good spirit give an impression of unnaturalness.

HERVIDERO, n. *hër'vî-dā'rō* [Sp. *hervidero*, ebullition—from *hervir*, to boil]: the name given in Central America to the mud-volcanoes.

HERZ, *hertz*, HENRI: pianist and composer for the piano-forte: b. 1806, Vienna; of Jewish parentage. He was educated principally in Paris, where his talent was early recognized; and his compositions became popular over Europe. He was received with great applause in England 1834, and America 1846. In 1837, he received the decoration of the Legion of Honor; and, 1843, became prof. of music at the Conservatoire. In 1865 he published, in the *Moniteur*, *Mes Voyages en Amérique*. He also carried on the business of a piano manufacturer. H's music is characterized by elegance and a certain originality. He died 1888, Jan. 6.

HERZEGOVINA, *hért-seh gō-ve'nâ*: province of the Turkish Empire, now occupied by Austria; between Bosnia, Montenegro, and Dalmatia. Under the Venetians, the H. was called the Dukedom of St. Saba; later, it had the name of the county of Chulm; and 1326, was again raised to a dukedom by Emperor Frederic III. As early as 1466, the H. fell into the hands of the Turks, remaining for more than two centuries the battle-field between Christians and Mohammedans. By the treaty of Carlowitz (1697), the H. was definitively annexed to the Turkish empire, with the exception of the town Castelnuovo and its outskirts, which to this day belong to Austria. In the early history of Hungary, the H. had a prominent part, as Bosnia and Bulgaria were long subject to the Hungarian crown. Its physical aspect, as also its political and ethnographical character correspond to those of Bosnia (q.v.). In 1875, a serious insurrection, arising from the Turkish oppression of its Christian inhabitants, broke out in the H., which rapidly spread into other semi-Christian provinces, and was supported by Montenegro and Servia. This ultimately led to the war (1877-8) between Russia and Turkey; and the treaty at the end of the war provided for introducing into H. a degree of local autonomy. The Berlin Congress 1878 determined that H., like Bosnia, should be occupied by Austria. There was a rising in H. against Austria in 1881-2. not suppressed without trouble. Pop. H. and Bosnia (1896) 1,565,357.

HERZOG, *hër'tsōch*, JOHANN JAKOB, D.D.: 1805, Sep. 12—1882, Sep. 30; b. Basel, Switzerland: theologian. He

HESIOD.

studied theol. in Basel and Berlin 1823-29, was prof. of historical theol. at Lausanne 1835-45, at Halle 1847-54, and Erlangen 1854-77, and then retired to apply himself wholly to authorship. His published works comprise *J. Calvin* (1843), *Das Leben Ækolampadii*, 2 vols. (1843), *De Origine Valdensium* (1848). *Die Romanischen Waldenser* (1853), *Real-Encyclopädie für Protestantische Theologie*, 22 vols. (1854-68), and *Outline of Church History*, 3 vols. (1876-82). At the time of his death, he was bringing out a revised ed. (begun 1877) of his great *Real-Encyclopædie*, a work of great research and high value. A condensed American ed. was published by Philip Schaff, D.D. 1882-3.

HESIOD, *hē'si-od.*: next to Homer the earliest Greek poet of whom we have any knowledge: probably nine centuries before Christ; b. at Ascra, in Bœotia, whither his father had emigrated from the Æolian Kyme, in Asia Minor. He seems to have been at first a peasant or herdsman in humble circumstances: in his *Works and Days*, he speaks of himself as *atimētos*, 'unhonored,' 'noteless.' He afterward left Ascra, and went n. to Orchomenos, on Lake Copais, where he dwelt during the remainder of his life, and where in later times his tomb was shown. This is really all we know about H., for the marvellous stories of the Neo-Platonists give no intelligible clue to his personal history, and, in the opinion of some critics, even throw grave doubts on his historical reality altogether; though this is probably too extreme a view. But while it may not be necessary to reject the personality of H., it may still be allowed that he was a 'representative man,' the founder and head of a school of poets—the Bœotian or Pierian—in striking contrast with the older Ionic or Homeric school. Their original region was at the foot of Mount Helicon, whence they spread over Bœotia, Phocis, and Eubœa. Their language and versification were nearly the same as those of the Homeric school, but in all other respects they appear to have been different, and even antagonistic, ignoring the sanguinary struggles of the heroic age, and preferring to sing of rural quietude and peaceful pursuits, the simple household life, the homely duties of thrift, the education of children, and the prosaic details of commerce and politics. Hence the Spartan, Cleomenes, scornfully termed H. the 'poet of helots,' while Homer was the poet of warriors. In fine, it may be said that the poetry of the Hesiodic school indicates an advance in civilization, morality, and thought, on the Homeric school.—The works either written by or ascribed to H. are seven, of which the following are the more important: 1. *Erga kai Hemeraî* ('Works and Days'), in the time of Pausanias, the only one considered to be truly H.'s by the people about Mount Helicon; 2. *Theogonia* ('Generation of the Gods'), not considered genuine by H.'s countrymen, nor by most modern critics; 3. *Eoiai* or *Eoiai Megalai*, called also *Katalogoi Gunaikôn* ('Catalogues of Women'). Of these the first two are entire; while the well-known *Aspis Herakleos* ('Shield of Hercules') is supposed by some to be a relic of the third. The Hesiodic poetry was, in ancient times, if not warmly

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admired, at least held in veneration. Both the priesthood and the philosophers considered the *Theogony* a great—in fact, the greatest authority—on the subjects of which it discourses; and almost all the great Alexandrine critics earnestly labored in its elucidation, but their commentaries have perished. Only here and there among the *Scholia* of the later Neo-Platonists some of their remarks are preserved. The most complete collection of these is in Gaisford's *Poetae Græci Minores*. The first ed. of the Hesiodic poems appeared at Milan 1493; subsequent editions are those of Heinsius (Amsterdam 1667), of Robinson (Oxford 1737), of Loesner (Leips. 1778), Gaisford, Götting (1831), Schömann (1869), Köchly (1870), and Flach (1874).

HESIODIC, a. *hĕ-sĭ-ōd'ĭk*: contained in, resembling, or connected with the poems of Hesiod.

HESITATE, v. *hĕz'ĭ-tāt* [L. *hesitātus*, undecided, hesitated: F. *hésiter*]: to pause respecting decision or action; to be in doubt; to delay; to waver; to stammer in speech. **HESITATING**, imp.: **ADJ.** pausing; stammering. **HESITATED**, pp. **HESITA'TION**, n. *-tū'shŭn* [F.—L.]: doubt; suspense of opinion or decision from uncertainty how to act. **HESITATINGLY**, ad. *-lĭ*. **HESITANCY**, n. *-tān-sĭ*, a pausing to consider; suspense.—**SYN.** of 'hesitate': to pause; demur; doubt; scruple; falter; stammer; deliberate; stop; waver; fluctuate.

HESPER, n. *hĕs'pĕr* [L. *Hespĕrus*; Gr. *Hespĕros*, Hesperus]: the evening star. **HESPE'RIAN**, a. *-pĕ'ri-ān*, western; situated at the west. **HESPER'IDES**, n. plu. *-pĕr'ĭ-dēz*, in *anc. myth.*, the daughters of Hesperus, possessors of the fabulous garden of golden apples, guarded by a dragon: the golden apples were those which Hera had received, on her marriage with Zeus, from Ge. The genealogy of the H. as well as their number, are variously given by mythologists. The locality of the gardens was also in dispute, the two favorite opinions placing them w. of Mount Atlas, and n. of the Caucasus. The apples were stolen by Hercules (q.v.), but were afterward restored by Athena. **HES'PERID'IUM**, n. *-pĕr'id'ĭ-ŭm*, an indehiscent many-celled fruit coated with a spongy rind, the cells containing a mass of pulp, in the midst of which a few seeds are embedded, as in the orange.

HESPERIA, n. *hĕs-pĕr'ĭ-a*: in *entom.*, typical genus of the family *Hesperide*, a family of *Rhopalocera* (butterflies). The species fly with extreme rapidity.

HESPERORNIS, n. *hĕs-pĕr-awr'nĭs* [Gr. *hesperis*, western; *ornĭs*, a bird]: fossil bird, typical of the order *Odontolæ*, sub-class *Odontornithes*. *H. regalis*, has been described by Prof. Marsh from the Cretaceous rocks of N. America. It resembles a diver, *Colymbus*, but has teeth in its jaw, and only rudimentary wings.

HESSE, *hĕs*, or **HESSIA** (Ger. *Hessen*): territory of Germany occupied in ancient times, by the *Catti*, or *Chatti*, who became known to the Romans A.D. 15, when Germanicus destroyed their principal settlement of Mattium, the site of the present villages of Gross and Klein Maden, near

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Gudensberg. In the course of time, the Catti, who were settled in the districts now known as Upper and Lower Hesse, gradually merged in the Frankish tribes, with whom they took part in the great emigration into Belgium and Gaul, after which the territories which they had evacuated were occupied by Saxons, who thenceforward kept possession of the land known in after-ages as Saxon Hesse. The power of the chiefs had in the meanwhile become so firmly established under the Frankish empire that on the fall of the Carlovingians, 911, Conrad I., Duke of Franconia and Hesse, was elected to the vacant throne of Germany, as being the most powerful of the princes of the empire. The various branches of the Hessian family still extant are descended from Heinrich I., surnamed the Child (died 1306), son of Sophie Duchess of Brabant. Although he himself exercised little real power, owing to the dismemberment of H. into numerous semi independent principalities, his descendants gradually reunited these disjointed domains, and added many valuable territories on the Rhine to their old patrimony. Philip I., the Magnanimous, who succeeded his father, Wilhelm II., as a minor, 1509, introduced the Reformation into H., and founded the Univ. of Marburg with the revenues of the secularized convents and monasteries. This prince was active in the peasant and religious civil wars of his day, and, by a will made 1562, divided his territories among his four sons, who succeeded to their allotted possessions at his death, 1567. The eldest, Wilhelm IV., obtained the half of the Hessian domains, with Cassel for his residence; Ludwig, a fourth part, with Marburg; Philip, an eighth part, with Rheinfels; and George, an eighth part, with Darmstadt. The death of Philip and Ludwig left all the Hessian dominions in the two main lines of Hesse-Cassel and Hesse-Darmstadt (q. v.).

HESSE-CASSEL.

HESSE-CASSEL, *hës-kâs'sel*, or **ELECTORAL HESSE**, *ê-lèk'tèr-al hës* (Ger. *Hessen-Kassel*): formerly an electorate of the Germanic Confederation, consisting of one large and five smaller districts, including the countship of Schaumburg and Schmalkald, a part of Henneberg and Barchfeld, with various townships, impacted within the territories of other states. In consequence of the occurrences of 1866, it was annexed to Prussia Sep. 16 of that year; and, 1868, Dec., went to form a part of the new province of Hesse-Nassau, which embraces, besides H.-C., the greater part of Nassau (a.v.), a part of Hesse-Homburg, and the Frankfurt territory.

Districts.	Sq. Miles.	Total Pop. in 1890.	Chief Towns.	Pop. 1890.
Cassel	3,880	820,988	{ Cassel..... Hanau.....	72,477 25,029
Wiesbaden	2,125	843,438	{ Wiesbaden . Frankfurt ...	64,670 179,985

Pop. (1890) 1,664,426; (1900) 1,897,981.

Physical Character.—The country generally is hilly, in some places even mountainous, forming a part of the great central elevated plateau of Germany. The principal ranges are the Habichtswald, the Thüringerwald, of which the greatest elevation is the Inselberg (2,930 ft.), the Meissner (2,350 ft.), the Hundsrück, Kellerwald, and Rheinhardwald.

The principal rivers are the Werra, with numerous small affluents, but which belongs only in part to Hesse-Nassau; the Fulda, whose course appertains almost exclusively to the province; the Edder, Weser, Main, and Lahn.

Climate, Soil, Products.—The climate is generally mild, but in some mountainous districts, as the Rhöngebirge, it is at times severe. The mean annual temperature is 48°·5 Fahrenheit.

The soil is almost everywhere fruitful and adapted to agriculture. Cereals of all kinds yield good returns. The most cultivated districts are in the s.w. of Hanau, where much fruit and some good wines are produced. Flax is grown in Schaumburg and Lower Hesse, and tobacco in the valleys of the Werra. It is estimated that for every hundred parts the land is distributed nearly in the following ratio; woods, 40; arable land, 37; meadow land, 11; miscellaneous, 12.

The mineral products comprise copper, lead, cobalt, vitriol, alum, clay, large quantities of iron, coal, and salt, the last three of which are the property of the state. The mountain districts have many good mineral springs, the most important of which are those at Schwalheim, Wilhelmsbad, Hofgeismar, Rodenberg and Nenndorf.

Industry, Imports, and Exports—Trade.—In addition to agriculture and the rearing of cattle and other animals, the chief branches of industry are the weaving of linen

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and yarn, which, though everywhere practiced, is prosecuted with most vigor about Fulda and Marburg. There are good steel and iron works at Schmalkald, and manufactures of guns at Cassel, and porcelain, glass, paper, and gold and silver wire-works in Hanau and other parts of the province. The exports consist principally of yarn and linens, iron and steel wares, fine clay, wood, leather, grain, dried fruits, and mineral waters. The transit-trade is considerable, conducted principally by way of Hanau, Carls-hafen, and Eschwege. The internal commerce and industry centre especially in Cassel, Hanau, Frankfurt-on-the-Main, Wiesbaden, Fulda, Gersfeld, Carlshafen, Dillenburg, and Limburg. There are excellent public roads throughout the province, and more than 400 m. of railway, in addition to which it has great facilities for internal trade in its numerous navigable rivers.

Education.—There are, besides numerous national schools, ten gymnasia, eight arts, and various polytechnic, theological, military, and other schools. Hesse-Nassau has one university at Marburg, memorable as being the first which was founded after the Reformation, and without papal authority (1527).

Religion.—The majority of the population belong to the Reformed or Calvinist faith, but the Lutherans, United Protestants, Rom. Catholics, and Jews are well represented. At its annexation to Prussia, 1866–7, the number of Prot. churches was 1375; Rom. Cath. churches 486; Jewish synagogues, 246; other churches, 8. All the churches recognized by the state enjoy equal rights.

Law.—The supreme court of appeal is at Cassel, with two high courts of justice at Cassel and Fulda under whose jurisdiction are various criminal and magisterial courts.

Electoral Hesse was formerly a limited monarchical government. The ruler bore the title of Electoral Prince and Landgraf of Hesse, Grand Duke of Fulda, Prince of Hersfeld, Hanau, Fritzlar, and Isenburg, Count of Katzenellenbogen, Dietz, etc. The dignity, hereditary in the male line only, is at present held by the elector Frederick Wilhelm I. The elector was assisted in the government by a council of ministers, who were partially responsible. A new constitution, based on the federal decision of 1857, was promulgated 1860, providing for two representative chambers. H.-C. occupied the eighth place in the German Confederation: it had three votes in the *Plenum* or general council of the diet, and supplied a contingent of 6,626, and a reserve of 2,840 men. to the federal army.

History.—Hesse-Cassel is the elder line of the House of Hesse, founded by Landgraf Wilhelm IV., or the Wise, son of Philip the Magnanimous (reigned 1567–92), who held his court at Cassel. Wilhelm was succeeded by his son Maurice, who joined the Prot. Church, and five years before his death resigned the government 1627 to his son Wilhelm V. The latter fought on the side of Sweden during the Thirty Years' War, for which he was put un-

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der the ban of the empire. His two brothers, Hermann and Ernest, respectively founded the lines of Hesse-Rotenburg and Hesse-Rheinfels; and on his death 1637, his widow assumed the regency for their young son, Wilhelm VI., and, by her ability, secured for him, as an indemnification for the losses which the country had sustained during the war, the greater part of Schaumburg and the principality of Hersfeld. The successors of Wilhelm V. pursued the practice that he had begun of hiring out Hessian soldiers to fight in the service of foreign princes, a practice by which the finances of the state were considerably augmented at the expense of the welfare and morality of the people; while, in some instances it led to the formation of important alliances on the part of the reigning house. The landgraf, Friedrich I., who succeeded his father 1730, had become king of Sweden 1720, in right of his wife, Princess Ulrike Eleanor, sister of Charles XII. His brother, Wilhelm VIII., to whom he had resigned his Hessian territories, fought under the British and Hanoverian flag in the Seven Years' War, and gained renown for himself and his troops during the war, which was especially disastrous to the welfare of his states. Wilhelm's son, Friedrich II., persevered in the same course, and kept up a splendid court on the proceeds of the pay, amounting to £3,000,000, which the British government gave him for the services of the 22,000 Hessians who fought against the Americans in the war of independence. Friedrich, who had become a convert to the Rom. Cath. Church, died 1785, and was succeeded by his son, Wilhelm IX., who reigned as Wilhelm I., after his elevation to the rank of an elector 1803. This prince frequently shifted sides and parties during the French revolutionary and imperial war, fighting with his Hessian mercenaries first under British colors, then in conjunction with Prussia, and in 1806 as the ally of Napoleon, who in return for his aid promised to respect the neutrality of the electorate. After the battle of Jena, the French emperor, suspecting the motives which had actuated the elector in augmenting his army, threw troops into the Hessian territory, and at the peace of Tilsit incorporated the electorate in the newly formed kingdom of Westphalia. In 1813, Wilhelm returned to his dominions after the overthrow of French power in Germany, and at once began to restore the old order of things as far as he could; while he entered on a course of vexatious litigation to recover the state lands that had been sold during his exile, and appealed to the diet with such importunate pertinacity for indemnification, that he obtained various important concessions at the congress of Vienna, though he failed in his wish to secure the title of king, of which he was especially ambitious. In accordance with the promise which he had made his subjects on his restoration to power, he summoned a body of jurists to construct a constitution; but no sooner was a draft of this new scheme completed, than he refused to fulfil his promises. His death 1821 was regarded as fortunate for the electorate; but his son and successor, Wil-

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helm II., by his narrow policy, increased the rapidly growing disorders of the state, while his relations to his mistress, the obnoxious Countess of Reichenbach, rendered him peculiarly unpopular with his subjects. These disorders were partially arrested by the retirement of the elector 1831, and the nomination of the electoral prince to the rank of regent. But the history of the 16 years' regency of Prince Friedrich Wilhelm exhibits only a series of intrigues at court, dissensions between the government and the representatives of the people, and a retrogressive policy, which left H.-C. far behind other German states in material prosperity. The death of the old elector at Frankfurt, whither he had retired on his abdication, raised the regent 1847 to the rank of sovereign elector. The revolution of Paris, 1848, extorted from the terrified prince many liberal promises of reform, some of which were redeemed; but in 1850, after revoking many of his pledges, he summoned the obnoxious Hassenpflug and Haynau to govern the country. Hassenpflug's measures at length drew on him a public charge of maladministration and treason; and he having persuaded the elector that his personal safety would be endangered if he remained longer among his subjects, the prince and his minister fled by night from Cassel to Wilhelmsbad. 1850, Sep. 17, an ordinance proclaimed that the seat of government had been transferred to the latter place. Hassenpflug appealed to the Confederation for its intervention, and H.-C. became the rendezvous of troops; the Austrian and Bavarian contingents occupying the south, and the Prussians, apparently for the protection of the people against the elector, taking their position in the north. The threatened war was principally limited to angry protocols, but the result of the intervention was the restoration of the elector, who returned to Cassel. In 1852, a new constitution was promulgated, which in no way satisfied the people, whose conduct throughout the trying crisis had been marked by forbearance and moderation. But the policy of the government remained unchanged. In 1860, Oct., on the assembling of the chambers, a resolution was agreed to for addressing the elector, requiring the restoration of the constitution of 1831; but not till 1862, after much agitation and the interference of Prussia and Austria, did the elector so far accede to their wishes as to recognize the constitution of 1831, with the modifications of 1849. In the war between Austria and Prussia, H.-C. having sided with the former, a Prussian army entered the electorate, and it was ultimately annexed to Prussia 1866. Sep. 20.

HESSE-DARMSTADT.

HESSE-DARMSTADT, *hës-därm'stât*, or **HESSEN**, *hës'sèn* (actual Hesse of the present day): a grand-duchy of Germany, extending (exclusive of small outlying portions) 49° 24'—50° 10' n. lat., and 7° 50'—9° 10' e. long., and consisting of two nearly equal parts, separated by a strip of land belonging to Hesse-Nassau. The n. district is mountainous, being intersected by the Vogelsberg, and branches of the Taunus and Westerfeld; the s. is level, except in the e., which is occupied by the Odenwald range. H.-D. is divided into the following provinces:

Provinces.	Sq. Miles.	Pop. in 1900.	Chief Towns.	Pop. 1900.
Upper Hesse.....	1,269	282,047	Giessen.....	25,491
Starkenburg.....	1,165	489,512	Darmstadt...	72,381
Rhenish Hesse....	531	348,334	Mainz.....	84,251

Total area, 2,965 sq.m. Pop. (1875) 884,218; (1880) 936,340; (1885) 956,611; (1890) 992,883; (1900) 119,893.

Physical Character.—H.-D., which presents a succession of fruitful valleys and rich mountain slopes, is well watered, being traversed by the Rhine and Maine, Neckar, Nahe, Lahn, Nidda, Edder, Nidder, and Wetter.—The climate of the n. districts of H.-D. is very much more severe than that of the s. or Starkenburg district, which shares the climate of s. Germany.

Agriculture is in a very flourishing condition, nearly half of the soil being arable lands. Corn is grown in sufficient quantity for exportation, chiefly in Upper Hesse, where Indian corn, or maize, and flax, also are largely cultivated, while hemp, tobacco, and poppies are raised in Rhenish Hesse. The s. districts, in which a great variety of fruit is grown, including figs, almonds, chestnuts, etc., are specially noted for the excellence of their wines, the choicest of which are the Niersteiner, Laubenheimer, Bodenheimer, and red Ingelheimer, grown in the vicinity of Mainz, the Scharlachberger, near Bingen, and the Liebfrauenmilch in the districts around Worms.

Mineral products, which are inconsiderable, include copper, cobalt, iron, salt, and coal, the three latter of which are most abundant in the Wetterau districts.

Industry.—The principal branches of industry are, besides agriculture, the making of wine, which in good years yields a return of more than four million thalers; manufacture of cottons, linens, and stockings, and weaving of straw in Upper Hesse; preparation of oils and leather; and manufacture of paper, snuff, papier-mâché goods, etc. H.-D. is well provided with post-roads, and has a network of railways; while the steam-navigation of the Rhine, Maine, and Neckar, affords still more extensive means of communication, which, however, are partly or wholly closed in winter.

Revenue.—The budget for the year 1901-02 gives the following estimate of the financial condition of grand-duchy: Annual receipts, 82,667,462 marks, including

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10,033,228 surplus of 1900-01. Annual expenditure exactly equalled revenue. Public debt, mainly for construction of railways, amounted 1902 to 302,475,130 marks.

Army.—The troops belonging to H.-D. form the 25th division of the army of the German empire. There is a military college at Darmstadt.

Education.—There are in H.-D., besides its numerous national schools, 11 *real-schulen* (see GYMNASIUM), 6 gymnasias, various theological, technical, industrial, and agricultural schools; while higher educational wants are supplied by the Univ. of Giessen, with its noble library, and numerous scientific institutions connected. The chief towns support scientific and literary societies, and the duchy generally is favorably distinguished for diffusion of knowledge.

Religion.—There were (1900): Prot. 746,201; Rom. Cath. 341,480; Isrealites, 24,486; other creeds 7,458. The Lutherans have a consistory at Darmstadt, with three minor courts under its jurisdiction; the Rom. Cath. churches are under the supervision of a bishop who has his see at Mainz.

Law.—There is a supreme tribunal of law at Darmstadt, with lesser courts at Darmstadt, Giessen, and Mainz, and numerous local courts in country districts, in some of which trial by jury prevails.

Political Constitution, etc.—H.-D. supplied a contingent of 7,227 men, with a reserve of 3,098, to the federal army, occupied the 9th place in the German Confederation (q.v.), and had 3 votes in the *Plenum* or full council, and 1 vote in the limited council. It is a limited monarchical state. Its ruler, who must be a Lutheran, bears the title of royal highness, and ranks as Grand-Duke of Hesse, and as a Rhenish grand-duke. The succession is hereditary in the female line in default of male issue. In accordance with the law of 1856, there are 2 legislative chambers of representatives, which must be convoked at least once in every 3 years, but the real power of the government rests with the council of state and the 4 ministries into which the several branches of the administration are divided.

History.—The line of H.-D., the second main branch of the house, is derived from the Hessian count, George I., who, on the death of his father, Philip the Magnanimous, 1567, obtained the upper countship of Katzenellenbogen, with the town of Darmstadt for his residence; and succeeded 1583, on the death of his brother without heirs, to a third of the patrimony of the latter. He was succeeded 1596 by his eldest son, Ludwig V., while his third son, Frederick, became the founder of the Hesse-Homburg line (q.v.). Ludwig V., who acquired a portion of Upper Hesse, was founder of the Univ. of Giessen. Although H.-D., like every other part of Germany, suffered considerably during the French revolutionary wars, it finally acquired great addition to its territories through the agency of Napoleon. Ludwig X., who had succeeded his father as landgraf 1790, joined the Confederation of the Rhine, and after having acted against Austria 1809, and in concert

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with the French 1813, offered, after the battle of Leipsic, to act with the allies against France, on condition of being allowed to retain his various acquisitions of territory. He had assumed the title of grand duke 1806, and on that occasion he promulgated various legislative edicts, and annulled the pre-existing union of the H. D. and the Hesse-Cassel diets. In 1814, he joined the German Confederation, and made large cessions of territory to Prussia, Bavaria, and Hesse-Cassel, receiving by way of indemnification a portion of the French dept. of Donnersberg, or Mainz, extending to the Lahn, and the greater part of the principality of Isenberg, in right of which he assumed the additional title of a Rhenish grand duke. In accordance with the decree of the federal diet, Ludwig gave his subjects a representative form of government in 1820, the scheme of which was, however, so obnoxious to the assembled states, that the grand duke and his advisers were compelled to withdraw it, and to substitute another in its place. The task of framing this constitution occupied several diets in succession, and gave rise to much angry discussion within and without the chambers. The death, 1830, of the grand duke, who from various causes was endeared to his subjects, widened these differences, and angry discussions soon arose in regard to the civil list to be accorded to the new grand duke, Ludwig II. In the course of the next few years, one diet after another was convoked and prorogued, but no material change was effected in the relative position of the chambers and the government. The death of the grand duke, Ludwig II., 1848, and the accession of his son and co-regent, Ludwig III., grand duke until 1877, brought little change for the better. In the meantime, notwithstanding frequent dissensions in church and state, the duchy made considerable advances in material prosperity; railways were opened, and new roads formed; monopolies and other commercial restrictions removed; greater freedom was permitted in the curriculum of the university, and a more liberal spirit infused into the system of the education in the national schools. Although these and many other improvements were grudgingly yielded, they have been permanent, but the character of the grand-ducal policy has neither been liberal nor in accordance with the wishes and views of the majority of the people. See GERMANY.

HESSE-HOMBURG, *hēs hōm'bûrg*: formerly an independent German landgraviate, but now a portion of the kingdom of Prussia. The landgraviate was divided into the provinces of Homburg and Meisenheim; the former bounded by H.-Darmstadt and H.-Nassau, and the latter by Rhenish Prussia and the Bavarian Palatinate.

Provinces.	Sq. Miles.	Pop. (1861).	Chief Towns.	Pop.
Homburg,	32·90	12,617	Homburg,	8,626
Meisenheim,	73·08	14,200	Meisenheim,	2,758

Total area, 105·98 sq. m.: pop. (1861) 26,817. Homburg is a fruitful district on the slopes of the Taunus Mountains,

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which produces grain, wine, and timber; while Meisenheim is mountainous, and yields much coal and iron, and some excellent wine. The budget for 1861 gives the following amounts: namely, receipts, 500,520 florins; expenditure, 441,166 florins; surplus of 59,354 florins. Debt (1865), 3,000,000 florins.

The troops of the landgraviate were 366 men, including a reserve of 100, which comprised the contingent of H.-H. to the federal army. H.-H. was represented by Hesse-Darmstadt in the limited council of the diet, but it held one independent vote in the *Plenum* or full council. The established religion was Protestant, to which 19,000 of the inhabitants belonged, the great majority of whom were attached to the *Reformirte Kirche*, while there were 4,950 Rom. Catholics, and about 1,000 Jews. H.-H. had a legislative representative chamber.

The landgraviate was an integral part of Hesse-Darmstadt (to which it reverted on the failure of the direct line 1866) till it was transferred, on the death of the landgraf, 1596, to his youngerson, Friedrich I., in whose family it remained as an independent state till 1866. Little change was effected in the province till the congress of Vienna, when it was augmented by the addition of Meissenberg. In 1817, H.-H. was admitted into the German Confederation. The opening of the springs and baths at Homburg 1833 proved an unexpected source of wealth to the state, and after the addition of gambling-saloons, the establishment constituted a very important branch of the revenue. Attempts were more than once made by the diet to put down the gambling-tables; but whenever the pressure of federal intervention was removed, gambling was always resumed with fresh spirit; in 1862, however, the deputies passed a law for its gradual suppression, and since the passing of H.-H. into the hands of the Prussian govt., the system has been completely suppressed. Since their first opening, play, with only temporary abatement, was prosecuted at all hours and seasons by all ranks, from peasants to princes and princesses, and almost at all ages, except among the subjects of H.-H., who were stringently forbidden to participate in it.

In 1835, H.-H. joined the Zollverein (q.v.). In 1866, Mar., on the death, without heirs, of the last landgraf, Ferdinand Heinrich Friedrich (who succeeded his brother, Philip August, 1848), the landgraviate fell to Hesse-Darmstadt, but remained united with that duchy only a few months, being ceded to Prussia 1866, Sep. 13. It now forms part of the Prussian provinces of Hesse-Nassau and Rhenish Prussia. See GERMANY.

HESSE-NASSAU: see HESSE-CASSEL: NASSAU.

HESSIAN, a. *hěsh'an*: relating to Hesse: N. a native or inhabitant of Hesse.

HESSIAN FLY.

HESSIAN FLY (*Cecidomyia destructor*): dipterous insect which infests the wheat plant; named from the Hessian soldiers who are supposed to have brought it to this country with a lot of straw in 1776, but some entymologists believe it to be indigenous. It is very common throughout the wheat-growing states as far w. as Kansas. In some seasons it damages the crop to the amount of millions of dollars.

Two broods appear each season; and in the warmer parts of the country a third, but somewhat smaller one, is formed. The adult is a small, dark-colored insect. The larva is an orange-colored maggot without feet. The female lays about 30 eggs, upon the leaves of the wheat plant. The eggs for the first brood are laid in April or May, and those of the second during the first half of September. They hatch in four or five days, and the larvae work their way down between the stalk and a portion of a leaf which envelops it as a sheath. When a joint is reached they fasten themselves to the stalk and feed on its juices. The joint becomes enlarged, the stalk turns yellow, and in many cases is so weakened that it falls to the ground. The affected stalks either fail to fill their heads or, if less severely injured, yield only a small quantity of imperfectly developed grains. In four to seven weeks after commencing their depredations the larvae change to a semi-pupa, or 'flax-seed state.' If this change occurs in autumn they remain without further modification during the winter. The next change is to the pupa form from which they finally emerge as perfect insects.

On account of the secluded position in which it works it is difficult to destroy this pest without, by the same means, destroying also the plants on which it feeds. Various applications have been tried, but it is not easy to place the remedy between the stalk and its sheath, while any substance that would destroy the larvae would be likely to kill the plant. Consequently, efforts should be made to prevent the laying of the eggs, and the development of insects from eggs deposited in the autumn. Sowing late in the season is often resorted to as a means of preventing the ravages of the insect, but it proves a serious injury to the crop. A better plan is to sow a strip around the field quite early, leaving the remainder until the usual time of sowing. Most of the eggs will be laid upon the early wheat, which should be plowed into the ground about Sep. 20. This will prevent hatching of the eggs; and the strip, if at once re-seeded, may produce a moderate crop. Pasturing with sheep late in Nov. destroys many larvae. Burning the stubble after harvest also is efficient, and if universally and persistently followed, would eradicate the pest. There are several parasites which destroy large numbers of the larva. Thorough preparation of the land and high manuring, by increasing the vigor of the plants, enables them to better withstand insect attacks. Spring wheat suffers less than winter grain, and the hardy sorts suffer less than the delicate varieties.

HEST—HESYCHAISTS.

HEST, n. *hěst* [Icel. *heit*, a vow—from *heita*, to promise: O.H.G. *heiz*, a command: see *behest*, of which *hest* is the older form]: in *OE.*, a promise; a behest; a command.

HESTIA, *hěs'tī-a*: Greek goddess to whom was ascribed the art of house-building, believed to be identical with the Vesta of the Romans. She typified home and home life, particularly the domestic hearth; and politically the idea that the state was one great family. It has been argued that if the Greek H. and Roman Vesta were identical, the worship of the divinity goes back to a period when the Greeks and Latins were still an undivided people. Each Latin community had its public altar to Vesta, and a central one for the whole people was at Lanuvium, and the sacred fires were renewed annually Mar. 1. The Greeks had a central or common hearth at Athens, and the sacred fire of H. there was always kept burning, or if by any mischance it went out, fire made only by friction or obtained direct from the sun's rays was used to rekindle it. H. was the altar fire, the goddess of the family union; she shared the honors of all the gods; opening sacrifices were offered her; and the first and last libations at the sacrificial meal were poured to her. Her home was in the Prytaneum, or great hall where the prytanes (certain magistrates who presided over the senate) met to give audiences to the people, offer sacrifices, and feast with special benefactors of their country. The common hearth-fire around which these magistrates sat, was always burning, and there the sacred rites were performed that were believed to sanctify the concord of city life. A statue of H. stood in the Prytaneum at Athens, and temples in her honor stood in Hermione and Olympia, but such honors were far less usual to her than to the Roman Vesta.

HESYCHAISTS, *hě'sī-kāsts* or *hěs'ī-kāsts* [gr. *hēsychazō*, to be quiet]: mystic and contemplative sect of the Greek Church, who renewed in the 14th c. the errors and practices of the older Euchites (q.v.), and who may be described as the Quietists of the East. There is reason to believe that the principles of the ancient mystics never entirely died out among the oriental monastic bodies; but they attracted unusual attention in both the eastern and the western church in the earlier half of the 14th c. A Basilian monk, named Barlaam, native of Calabria, the ancient Magna Græcia, and himself of Greek origin, in a visit to the monasteries of Greece, observed among the monks several practices and doctrines which he considered grievously reprehensible; and was particularly struck by the doctrinal abuses of the monks of Mount Athos, the 'holy mountain,' the great stronghold of monasticism in Greece. In common with the mystics of all times, these monks placed all perfection in contemplation, and in the elevation and abstraction of soul which contemplation produces. One practice especially provoked his reprobation, and, indeed, his ridicule. Believing that in the soul lay hidden a certain divine light, which it was the office of contemplation to evoke, they withdrew at stated times to a retired place,

HESYCHIUS—HETERARCHY.

seated themselves on the earth, and fixed their eyes steadfastly on the centre of the stomach (whence the sobriquet by which they were known, *omphalopsychoi*, *navel-souls*); and they averred that, after the allotted time of contemplation, a kind of heavenly light beamed forth upon them from the soul (whose seat, they held, was in that region), and filled them with ecstasy and supernatural delight. They declared that this light was the glory of God himself, and they connected it in some unexplained way with the light which appeared at the transfiguration of the Lord Jesus upon Tabor. Barlaam denounced these notions as fanatical and superstitious. On the other hand, they were explained and warmly defended by Gregory Palamas, Abp. of Thessalonica; and to settle the controversy, a council was held in Constantinople 1341, which terminated in the triumph of Palamas and the monks. The controversy afterward turned upon a point of doctrine—namely, on the nature of the so-called divine light supposed to emanate from the soul in this state of contemplation. Other councils were called, one of which, 1351, again pronounced in favor of the monks, through the influence, it is said, of the court and of the celebrated John Cantacuzenus, an ardent patron of the Hesychasts. But the public voice was hostile to the sect, and at the retirement of their patron Cantacuzenus, who, 1355, became a monk, they fell into obscurity. The controversy about the ‘Thaboritic Light,’ however, is still discussed in Greek theology. See Rubenberg’s work on the H.; Herzog’s *Realencyclopädie*.—See HYPNOTISM.

HESYCHIUS, *hē-sik'v-ūs*: Greek grammarian of Alexandria, of a period variously assigned between the latter part of the 4th c. and the middle of the 7th: author of a Greek lexicon, taken partly from earlier works of a similar character, with the addition of new words and examples from the writings of poets, orators, historians, and physicians. Its value is very great, as it supplies extensive information concerning the Greek language and literature, especially of an antiquarian kind. The first was published, Venice 1514; the best is by Alberti and Ruhnken (2 vols, Leyden 1746–66), to which additions were made by Schow (Leip. 1792). Compare Ranke, *De Lexici Hesychiani vera Origine et genuina Forma* (Leip. and Quedlinburg, 1831).—Not to be confounded with the foregoing is the historian HESYCHIUS of Meletus, surnamed the ‘Illustrious,’ who lived in the beginning of the 6th c., and was author of the following works: 1. On eminent teachers (*Peri tōn en Paideia lampsantōn Sophōn*); 2. On the city of Constantinople (*Peri tōn Patriōn Kōnstantinoupoleōs*); 3. A chronicle or history (*Biblion Historikon*, etc.), from the earliest times, to the death of Anastasius: it is now lost. See Orellius, *Hesychii Opera* (Leip. 1820).

HETAIRISM, *n. hē-tīr'izm* [Gr. *hetaira*, a mistress, a courtesan]: the system of communal marriage as practiced by some tribes; indiscriminate concubinage.

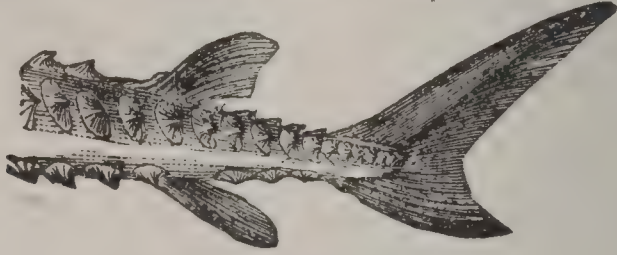
HETERARCHY, *n. hēt'ēr-ār'kē* [Gr. *hētēros*, another; *archē*, rule]: the government of an alien.

HETERO—HETERŒCIUM.

HETERO, *hět'ér-ō*, or **HETER**, *hět'ér* [Gr. *hětērōs*, another]: a common prefix, meaning another; one opposite or different; denoting; dissimilarity; irregular; abnormal.

HETEROCEPHALOUS, a. *hět'ér-ō-sěf'ă-lūs* [Gr. *hětērōs*, another; *kēphālē*, the head]: in *bot.*, having some flower-heads male, and others female, on the same plant.

HETEROCERCAL, *hět'ér-ō-sēr'kāl* [Gr. *hětērōs*, another; *kerkos*, a tail]: term designating a peculiarity of structure in the tail of some fishes, in which the tail is unsymmetrical with reference to the body of the fish or the vertebral column; the vertebral column being prolonged into the upper of the two lobes of the tail, and a second lobe, more or less distinct, appearing on the under side. The hetero-



Heterocercal Tail (Sturgeon).

cercal tail is of great importance to the paleontologist, being characteristic of the Cartilaginous Fishes, sharks, rays, and most ganoids. Although apparently strongly contrasted with the equally lobed or homocercal type seen in bony fishes, the study of development shows the latter to be a modification of the former type; compare the tail of a young salmon with that of a shark and a herring.

HETEROCHROMOUS a. *hět'ér-ō-krō'mūs* [Gr. *hětērōs*, another; *chrōma*, color]: in *bot.*, having the central florets of a different color from those of the circumference.

HETEROCLITE, n. *hět'ér-ō-klīt* [Gr. *hětērōs*, another; *klitos*, a slope]: anything irregular or anomalous—particularly applied to grammar: **ADJ** varying from the common forms; irregular. **HET'EROCLIT'IC**, a. *-ō-klīt'ik*, or **HET'EROCLIT'ICAL**, a. *-ī-kāl*, deviating from the common rule.

HETEROCYSTS, n. plu. *hět'ér-ō-sists* [Gr. *hětērōs*, another; *kustis*, a bag]: in *bot.*, colorless large cells, incapable of division, occurring at intervals in the threads of *Nostochineæ*.

HETERODOX, a. *hět'ér-ō-dōks* [Gr. *hětērōs*, another; *doxa*, an opinion]: contrary to right doctrines or tenets; holding doctrines contrary to those established or generally received; heretical; opposed to *orthodox*. **HET'ERODOXY**, n. *-dōks-ī*, the state of being heterodox; opinions or doctrines contrary to those generally received; heresy.

HETERODROMOUS, a. *hět'ér-ōd'rōm-ūs* [Gr. *hětērōs*, different; *dromos*, a course]: in *bot.*, running in different directions—applied to the arrangement of leaves in branches in a different manner from the stem; having spirals running in opposite directions.

HETERŒCIUM, n. *hět'ér-ē'shī-ūm* [Gr. *hětērōs*, another, different; *oikos*, a house]: sometimes applied to the

HETEROGAMOUS—HETEROMEROUS.

potato fungus, so named on the supposition that it exists as a parasite on some other plant before it attacks the potato. **HETERÆCISM**, n. *hět'ēr-ē-sizm*, the state or condition of a parasitic fungus, which is found in one stage of development on one body, and in another stage of development on quite a different body.

HETEROGAMOUS, a. *hět'ēr-ōg'ă mūs* [Gr. *hětērōs*, another; *gamos*, marriage]: in *bot.*, having the essential parts of fructification on different spikelets from the same root; having male, female, and hermaphrodite flowers. **HET'EROG'AMY**, n. *-ă-mĭ*, a circuitous method of fertilization in plants, in contradistinction to *orthogamy*, or direct fertilization; the state in which the sexual organs are arranged in some unusual manner.

HETEROGANGLIATE, a. *hět'ēr-ō-găng'gĭ-ăt* [Gr. *hětērōs*, another, different; *gangglion*, a little tumor under the skin]: in *zool.*, having a nervous system in which the ganglia are scattered and unsymmetrical, as in the mollusca. **HETEROGANGLIATA**, term introduced by Owen, and adopted by some zoologists, in accordance with a scheme of zoological classification founded on the nervous system in animals, to designate the *Mollusca* of Cuvier, with which are ranked the 'zoophytes' of the division *Polyzoa* or *Bryozoa*. The nervous centres or ganglia are not arranged in a longitudinal series of symmetrical pairs, but are variously distributed in different parts of the body; one principal ganglionic mass, however, occupying a position above the gullet, with which all the nerves of the special senses which exist are connected: with it, also, all the other ganglia communicate.—This new term has not been taken into general use among systematic zoologists, yet it certainly indicates a most important character in the organization of the animals indicated.

HETEROGENEOUS, a. *hět'ēr-ō-jē'nĭ-ŭs*, or **HET'ER-OG'E'NEAL**, a. *-nĕ-ăl* [Gr. *hětērōs*, another; *gĕnōs*, a kind]: of a different kind or nature; unlike; dissimilar; confused and contradictory, the opposite of *homogeneous*. **HET'EROG'E'NEOUSNESS**, n. **HET'EROG'E'NEOUSLY**, ad. *-lĭ*. **HET'ER-OGENE'ITY**, n. *-jĭ-nĕ'ĭ-tĭ*, opposition of nature; dissimilarity. **HETEROGENESIS**, n. *hět'ēr-ō-jĕn'ĕ-sĭs* [Gr. *gĕnĕsis*, origin, source]: the doctrine that certain organisms are capable of giving origin to others totally different from themselves, and which show no tendency to revert to the parent form; sometimes applied to spontaneous generation, in which living cells are supposed to be produced by inorganic matter.

HETEROLOGOUS, a. *hět'ēr-ōl'ō-gŭs* [Gr. *hětērōs*, another, different; *logos*, speech, appearance]: in *anat.*, applied to growths which are unlike normal, mature tissues; having a new growth of simple and normal tissue, but occurring in an organ of a different structure and at a distance from tissue of the same kind; a synonym of 'hyperplastic.'

HETEROMEROUS, a. *hět'ēr-ōm'ĕ-rŭs* [Gr. *hětērōs*, another, different; *mĕros*, a part, a portion]: in *bot.*, applied

HETEROMORPHIC—HETERORHIZAL.

to lichens where the thallus appears stratified by the crowding of the gonidia into one layer, and the hyphæ form two layers; in *zool.*, applied to the coleopterous insects which have five joints in the tarsus of the first and second pairs of legs, and only four joints in the tarsus of the third pair. **HETEROMERANS**, *n.* plu *hět'ër-öm'ë-ränz*, coleopterous insects whose legs have a different structure one from another.

HETEROMORPHIC, *a.* *hět'ër-ō-mör'fik* [Gr. *hětërös*, another, different; *morphē*, shape, form]: differing in form or shape; in *bot.*, having different forms of flowers as regards stamens and pistils, these being necessary for fertilization, as in *primula*. **HETEROMORPHISM**, *n.* *hět'ër-ō-mör'-fizm*, a deviation from the natural form or structure. **HETEROMORPHOUS**, *a.* *hět'ër-ō mör'fūs*, having an irregular or unusual form; having more than one form of flower differing in the relative positions of the essential organs. **HETEROMORPHY**, *n.* *hět'ër-ō-mör'fī*, deformity in plants.

HETEROPATHIC, *a.* *hět'ër-ō-pāth'ik* [Gr. *hětërös*, another; *pathos*, suffering]: regulating by a different action, force, or law. **HETEROPATHY**, *n.* *-öp'ä-thī*, same as **ALLOPATHY**.

HETEROPHAGI, *n.* plu. *hět'ër-äf'ä-jī* [Gr. *hětërös*, another; *phagō*, I eat]: applied to birds that are born in a helpless condition, and require to be fed by the parents for a longer or shorter period.

HETEROPHYLLOUS, *a.* *hět'ër-ō-fīl'lūs* [Gr. *hětërös*, another; *phullon*, a leaf]: in *bot.*, presenting two different forms of leaves on the same stem. **HETEROPHYLLY**, *n.* *-fīl'lī*, the variation in the leaves of plants in external form.

HETEROPLASTIC, *a.* *hět'ër-ō-pläs'tik* [Gr. *hětërös*, another; *plastikos*, formed, fashioned—from *plassō*, I form]; in *anat.*, applied to those growths which are unlike the tissues from which they take their rise; heterologous.

HETEROPOD, *n.* *hět'ër-ō-pōd* [Gr. *hětërös*, another; *pous*, or *poda*, a foot]: one of the Heteropoda. **HETEROPODA**, *hět'ër-öp'o-da*, group of branchial gasteropoda, in which the propodium is turned into a laterally compressed fin, while the epipodia are absent—i.e., in which the foot is so modified as to form a swimming-organ. The *Heteropoda* are the same as *Nucleobranchiata* of De Blainville; and S. O. Woodward prefers the latter name. They are delicate and transparent animals, some only with shells. They swim at the surface of the sea instead of creeping at the bottom, families, *Firolidæ* and *Atlantidæ*: in *paleon.*, the heteropoda came into being not later than the Lower Silurian.

HETEROP'TERA: see **HEMIPTERA**.

HETERORHIZAL, *a.* *hět'ër-ō-rī'zāl* [Gr. *hětërös*, another; *rhīza*, a root]: in *bot.*, applied to rootlets proceeding from various points of a spore during germination; rooting from no fixed point.

HETEROSCIAN—HEVELIUS.

HETEROSCIAN, a. *hět'ěr-ōsh'ĩ-ăn* [Gr. *hētērōs*, another; *skia*, a shadow]: applied to the inhabitants of the earth between the tropics and the polar circles, in allusion to their shadows, at noon, always falling in one direction—in the one case toward the north, and in the other toward the south: N. an inhabitant of either of those parts of the earth.

HETEROSOMATA, *hět-ěr-os-ō'ma-tá*: group of flat-fishes, sometimes classified as a sub-order of teleost fishes, now generally assigned as a family, *Pleuronectidæ*, of sub-order *Anacanthini*, of order *Teleostei*: see FLAT-FISH: **PLEURONECTIDÆ**.

HETEROSPOROUS, a. *hět'ěr-ōs'pō-rūs* [Gr. *hētērōs*, another; *spora*, spore, seed]: in *cryptogamic plants*, having both microspores and macrospores on the same individual.

HETEROTAXY, n. *hět'ěr-ō-táks'ĩ* [Gr. *hētērōs*, another; *taxis*, arrangement]: in *bot.*, the deviation of organs from their ordinary position or arrangement.

HETEROTROPAL, a. *hět'ěr-ōt'rō-pāl*, or **HET'EROT'ROPOUS**, a. *-pūs* [Gr. *hētērōs*, another; *tropē*, a turning]: lying across—applied to the embryo of seeds when they lie in an oblique position.

HETMAN, n. *hět'măn* [Pol. *hetman*; Russ. *ataman*, a head man or chieftain]: title of the head or general of the Cossacks, now retained only among the Cossacks of the Don. From earliest times the H. was elected by the assembled people; the mode of election being by throwing their fur caps at the candidate they preferred, and the one who had the largest number of caps was declared duly elected. The power of the H. was very great, and extended over life and death. When the Cossacks, 1654, submitted to the Russians, the H. was permitted to retain his rights as formerly. Empress Catharine entirely abolished the dignity of H. of the Ukraine, and substituted a government consisting of eight members. The Don Cossacks have, indeed, retained their H., but he possesses only the shadow of his former power. The last elective H. was Count Platoff, prominent in the wars with France (1812-14). After his death, the H. was appointed by the czar; and ultimately the title was made hereditary in the grand duke, the heir to the throne.

HEUCH'ERA AMERICA'NA: see ALUM ROOT.

HEULANDITE, n. *hũ'lăn-dīt* [after *Heuland*, the mineralogist]: a mineral, usually of a white, but also of a flesh or tile-red color, occurring in detached crystals, and in layers and granular masses; a silicate of alumina and lime.

HEVELIUS, *hē-vē'li-ūs*, Ger. *hā-vā'lē-ūs* (or HEVEL, or HEWEL, *hā'vēl*, or HEWELKE, *hā-vēlk'ēh*, or HÖVELKE), JOHANN: astronomer: 1611-87; b. Danzig; of an honorable and wealthy family. In 1641 he erected an observatory in his own house, and furnished it with large telescopes constructed by himself. He published numerous astronomical

HEVES—HEWITT.

works. II. was the first astronomer (1661) with the exception of Gassendi (1631), to observe a transit of Mercury; and it is now generally conceded that he ranks next to Flamsteed among the astronomers of his day. Delambre gives ten pages to the notice of his labors in his *Historie de l'Astron. Mod.*, and his life has been written by J. H. Wesphal (Königsb. 1820).

HEVES, *hă-věsh'*: small town of Hungary, county of H., in a productive flax and hemp-growing district, 60 m. e.n.e. of Pesth. Pop. 5,800.

HEW, v. *hū* [Icel. *höggva*, to strike, to cut: AS. *heawan*; Dut. *hauwen*; Ger. *hauen*, to hew]: to cut; to chop; to hack: N. in *OE.*, destruction by cutting down. HEW'ING, imp. HEWED, pt. and pp. *hūd*. HEWN, pp. *hūn*. HEW'ER, n. *-ér*, one who. HEWED, or HEWN, a. made smooth and even by cutting, as with a chisel; shaped by cutting. To HEW DOWN, to cut down; to fell by cutting. To HEW OUT, to shape; to hollow.

HEWES, *hūz*, JOSEPH: 1730-1779, Nov. 10; b. Kingston, N. J.: signer of the Declaration of Independence. He received a common-school education, engaged in commercial business in Philadelphia, removed to Edenton, N. C., 1763, was elected a state senator the same year, member of the continental congress 1774-77, and the first actual sec. of the navy 1779. He severed his connection with the Soc. of Friends on the denunciation of the congress in which he served by a general convention of the society.

HEW'IT, AUGUSTINE FRANCIS, D.D.: Rom. Cath. priest: b. Fairfield, Conn., 1820, Nov. 27; son of Nathaniel H., D.D. (1788-1867), Congl. and Presb. minister. He graduated at Amherst College 1839, entered the Windsor Theol. Institute, Conn., was licensed as a Congl. minister 1842, ordained a Prot. Episc. deacon 1843, received into the Rom. Cath. Church 1846, ordained priest 1847, joined the Redemptorist order 1850, and became a leading member of the congregation of St. Paul on its organization 1858. Since 1865 he has been prof. of philosophy, theol., and Holy Scripture in the Paulist Seminary in New York. He edited the *Catholic World* 1869-74, has published numerous works, and received the degree D.D. from Amherst College 1877.

HEWITT, *hū'it*, ABRAM STEVENS, LL.D.: statesman: b. Haverstraw, N. Y., 1822, July 31. He graduated at Columbia College 1842, was acting prof. of mathematics there 1843, admitted to the bar 1845, married a daughter of Peter Cooper 1855, and became associated with him and his son Edward Cooper in extensive iron works. He was sec. of the board of trustees of Cooper Union (q.v.) from its incorporation, an organizer of the 'county democracy' in New York, member of congress (excepting one term) 1874-86, elected mayor of New York 1886, and defeated for that office 1888. In 1867 he reported on iron and steel at the world's fair in Paris, 1876 was chairman of the democratic national committee, and pres. of the American Institute of Mining Engineers. 1883 was orator at the open-

HEX—HEXAMETER.

ing of the East River Bridge, and 1887 received the degree LL.D. from Columbia College. D. 1903, Jan. 18.

HEX, *hěks* [Gr. *hex*, six]: a common prefix, meaning six. **HEXACHORD**, n. *hěks'ă-kă'ord* [Gr. *hex*, six, and L. *chorda*; Gr. *chorde*, a string or chord]: name given by the ancient Greeks, in their music, to the great sixth. In modern music, hexachord denotes the six diatonic degrees of which Guido formed his scale, better known by the six syllables, Ut, re, mi, fa, sol, la, to which the scale was sung. The name is given also to a musical instrument of six strings.

HEXAD, n. *hěks'ăd* [Gr. *hex*, six]: in *chem.*, an element having a combining power of six equivalents; a sex-equivalent element.

HEXADACTYLOUS, a. *hěks-a-dăk'tŭl-ŭs* [Gr. *hex*, six; *daktulous*, finger, a toe]: having six fingers or toes.

HEXAGON, n. *hěks'ă-gŏn* [Gr. *hex*, six; *goniă*, a corner]: figure of six sides and six angles; when the sides and angles are equal, it is called a *regular hexagon*. If a regular hexagon be inscribed in a circle, the radius of the circle is equal in length to each side of it, and by joining the centre with the angular points six equilateral triangles will be formed. This property of the hexagonal furnishes a very simple method of dividing a circle into six equal parts, and at the same time constructing the hexagon, by merely laying off round the circle lines equal to the radius. Of the three figures which can completely occupy space (the equilateral triangle, square, and hexagon), the hexagon contains the greatest area within a given perimeter, the proportions between the three different figures being nearly as the numbers 4, $5\frac{1}{2}$, 6. Thus bees, making their cells of a hexagonal form, inclose the greatest space with the least expenditure of wax. **HEXAGONAL**, a. *-ăg'ŏ-năl*, having six angles and six sides. **HEXAGONALLY**, ad. *-lŭ*. **HEXAGYN'IAN**, a. *-ă-jŭn'ĭ-ăn*, also **HEXAG'YNOUS**, a. *-ăj'ĭn-ŭs* [Gr. *gunē*, female]: in *bot.*, having six styles or pistils. **HEX'AHE'DRAL**, a. *-hě'drăl* [Gr. *hēdrā*, a base or seat]: having six equal sides. **HEX'AHE'DRON**, n. *-drŏn*, one of the five regular solids, according to Plato; but in modern times the term Cube (q.v.) has been used in this signification, and the hexahedron is taken to include all solid figures of six faces.

HEXAGONENCHYMA, n. *hěks'ă-gŏn-ěng'kĭ-mă* [Gr. *hexagōnios*, or *hexagōnos*, six-angled; *engchŭma*, an infusion—from *chuma*, tissue, juice]: cellular tissue which when cut in any direction exhibits a hexagonal form.

HEXAMETER, n. *hěks-ăm'-ětĕr* [Gr. *hex*, six; *metron*, a measure]: the most important form of classical verse; the heroic or epic verse of the Greeks and Romans, the grandest examples of which are the *Iliad* and *Odyssey* of Homer, and the *Æneid* of Virgil. It consists, as its name implies, of six feet or measures, the last of which must be a spondee (a measure composed of two long syllables), and the penultimate a dactyl (one long syllable and two short). If the penultimate is also a spondee, the verse is said

HEXANDRIAN—HEXAPLA.

to be spondaic. The following are examples of the hexameter:

Pöllä d'ă | năntă, kă | tăntă, păr | āntă tē | dōchmă | t'ēlthōn.
HOMER.

Tītyrē | tū pătŭ | lœ, rēcŭ | bāns sŭb | tēgmīnē | fāgī.
VIRGIL.

The hexameter has been frequently employed in modern poetry, especially in German and English. The facility with which the first of these languages forms compounds is favorable to its use; and Klopstock, Goethe, and Voss have produced admirable specimens. It has been doubted whether the English is not too stubborn and intractable for the free-flowing majesty of the hexameter; and the question has had much discussion among scholars; though many think that the *Evangeline* of Longfellow, and to some extent the *Vacation Ramble* of Clough, have shown the practicability of this measure in English. A judgment on this may be formed from the opening lines of *Evangeline*:

'This is the | forest pri | meval. The | murmuring | pines and
the | hemlocks
Bearded with | moss, and with | garments | green, indis | tinct in
the | twilight,
Stand like | Druids of | eld, with | voices | sad and pro | phetic,
Stand like | harpers | hoar with | beards that | rest on their | bos-
oms.'

The last two lines show where English versification is weak—viz., in its spondees, unaccented syllables being compelled to do the duty of accented ones. **HEXAMETER**, a. having six poetic feet. **HEXAMET'RICAL**, a. -mēt'rī-kāl, also **HEXAMET'RIC**, a. -rīk, consisting of six poetic feet.

HEXANDRIAN, a. hēks-ăn'drī-ăn, or **HEXAN'DROUS**, a. -drūs, [Gr. *hex*, six; *anēr*, a man; *andros*, of a man]: having six stamens, of the genus **HEXAN'DRIA**, n. -drī-ă. **HEXAN'GULAR**, a. -ăng'gŭ-lēr [L. *angŭlŭs*, a corner]: having six angles or corners.

HEXAPARTITE, a. hēks-a-párt'it [Gr. *hex*, six; L. *partitus*, divided]: in *arch.*, term applied to a vault divided by its arching into six parts.

HEXAPETALOUS, a. hēks'ă-pēt'ă-lŭs [Gr. *hex*, six; *pētālōn*, a leaf]: having six petals or flower leaves. **HEXAPETALOID**, a. hēks'ă-pēt'ă-l-oyd [Gr. *eidos*, resemblance]: in *bot.*, having six colored parts like petals.

HEXAPLA, n. hēks'ă-plă [Gr. *hexaplous*, sixfold—from *hex*, six; *aplōs*, single, plain]: collection of the Holy Scriptures in six versions of the Gr. and Heb. text, arranged in columns. **HEXAPLAR**, a. -plār, containing six columns of the same matter in different versions, or in different languages. **THE HEXAPLA**, celebrated edition of the Septuagint version of the Scriptures, compiled by Origen for the purpose of restoring the purity of its text, and bringing it into closer agreement with the original Hebrew. In the multiplication of transcripts of the Greek text, numerous errors had crept in; and in the frequent controversies which arose between the Jews and the Greek or Hellenist (q.v.) Christians, the latter, in appealing to the Greek text, were often mortified by the discovery that

HEXAPOD—HEXHAM.

it did not represent faithfully the Hebrew original. To meet this evil, Origen undertook to provide a means of at least verifying the genuine Greek text, as well as of confronting it with the original. With this view, he prepared what is known as his *Tetrapla*, or 'fourfold' version, which he afterward extended into the Hexapla. The *Tetrapla* contained, in four parallel columns, the Septuagint version, together with those of Aquila, Symmachus, and Theodotion. The Hexapla contained, in addition, the Hebrew text, together with a transcript of that text in Greek characters. In some parts of the Old Testament there were superadded one, two, and even three other versions; so that in some parts the work contains nine columns, whence it is occasionally designated the *Henneapla*, or 'ninefold.' Of the origin of these latter versions little is known.

The Hexapla, however, was something more than a mere compilation of these versions. In the margin were given notes chiefly explanatory, as, for instance, of the Hebrew names. But a still more important characteristic of the work were its restorations and corrections of the original, in which Origen was guided chiefly by the version of Theodotion. This, however, he did not effect by arbitrary alterations of the received text; but, while he retained the common text, by indicating with the help of certain signs (an asterisk for an addition; an obelisk for a retrenchment) the corrections which he sought to introduce. Both these texts, the common (*koinē ekdosis*) and that of the Hexapla, are found combined in existing mss. The Hexapla, as a whole, has long been lost; several editions of those fragments of it which it has been possible to recover have been printed; by far the most complete of which is that of the celebrated Benedictine, Montfaucon (2 vols. fol. Paris 1714), which retains, so far as it was preserved in the mss., the arrangement and even the asterisks of Origen. For more detailed account, see the preface and *Præliminaria* of the work.

HEXAPOD, n. *hěks'ă pōd* [Gr. *hex*, six; *pous*, or *poda*, a foot]: a creature having six legs, as insects. **HEXAPODOUS**, a. *hěks-ăp'ō-dūs*, having six legs.

HEXASTICH, n. *hěks'ă-stīk* [Gr. *hex*, six; *stichos*, a verse]: a poem consisting of six verses.

HEXASTYLE, n. *hěks'ă-stīl* [Gr. *hex*, six; *stūlōs*, a column]: a building with six columns in front, or with six columns to support the roof.

HEXATEUCH, *hěx'a-tūk* [Gr. *hex*, six; *teuchos*, tool, book]: the first six books of the Bible—Genesis, Exodus, Leviticus, Numbers, Deuteronomy, and Joshua—considered as one specially connected series. See **PENTATEUCH**.

HEXHAM, *hěks'am*: small town of England, county of Northumberland; on the Tyne, 20 m. w. of Newcastle. The priory church, of the 12th c., is now the parish church. It has a lofty central tower, and at its w. end are remains of the magnificent monastery erected in the 7th c. by St. Wilfred. Pop. (1871) 5,331; (1881) 5,919; (1891) 5,945.

HEXYL-HEYNE.

HEXYL, n. *hěks'ül* [Gr. *hex*, six; *hulē*, material of which a thing is made]: a name applied to the class of alcohols containing six atoms of carbon; an aromatic oily liquid.

HEYDAY, int. *hā'dū* [Ger. *heyda*, an exclamation of high spirits. Sw. *hojta*, to shout. Gael. *aite*, glad, joyful]: an exclamation of frolic or exultation: N. frolic; wildness—applied to youth. *Note*.—HEYDAY is often a mere synonym for *high-day*, as in 'heyday of youth.'

HEYDEGUY, n. *hā'dē-gī* [connected with HEYDAY]: in *OE.*, a joyful and frolicsome dance.

HEYDEN, *hī'dēn*, JAN^v VAN DER: 1637–1712, Sep. 12; b. Gorkum, Holland: architectural and landscape painter. He was contemporary with Hobbema and Ruysdael, painted in partnership with Adrian van der Velde till 1672, studied mechanics, made valuable improvements in the fire-engine, and became supt. of lighting and director of the firemen's companies at Amsterdam. In his paintings he confined himself to architectural exteriors (with landscape), in which he was remarkable precise and painstaking; but depended on Van der Velde and Lingelbach for figure embellishment.

HEY'DUKE: see HAJDUK.

HEYLIN, *hī'lin*, PETER, D.D.: English clergyman, historian, and polemic writer: 1600, Nov. 29—1662, May 8; b. Burford, Oxfordshire; of an ancient Welsh family belonging to Montgomeryshire. He studied at Oxford, where he took the degree D.D. Through the interest of Laud, in whose theory of church and king he devoutly believed, H. was appointed chaplain-in ordinary to King Charles 1629. Subsequently, he held a variety of livings, but was deprived of them during the period of the commonwealth. At the restoration, he was made sub-dean of Westminster, an office which many of his friends thought an utterly inadequate reward of his literary services to the royal cause. H. was a very voluminous controversial writer, but his works are of value now only as illustrative of the age in which he lived, and the ecclesiastical party to which he belonged. Among his more than 50 works, are: *History of the Sabbath*; *Ecclesia Vindicata, or the Church of England Justified*; *Theologia Veterum*; *Examen Historicum*, containing, among other things, a violent attack on Fuller's *Church History*, which involved him in controversy with that author; *Historia Quinquarticularis*, or a defense of Arminianism; *History of the Reformation of the Church of England*; and *Ærius Redivivus, or the History of the Presbyterians*.

HEYNE, *hī'neh*, CHRISTIAN GOTTLÖB: German critic and archæologist of great celebrity: 1729, Sep. 25—1812, July 14; b. near Chemnitz, Upper Saxony; son of a poor weaver. The pastor of Chemnitz, himself very poor, procured tuition for H. at a school in the suburbs, and afterward sent him to Leipsic Univ., but failed to give him money for his support. His sufferings there were frightful, but his endurance was heroic. In 1753, he obtained

HEYWARD—HEYWOOD.

the situation of under-clerk in the Brühl library at Dresden. In this humble office, he prepared his edition of *Tibullus*, which saw the light 1755, and happening to fall into the hands of Rhunken of Leyden, excited the admiration of that scholar. In 1756, unfortunately for H., the Seven Years' War broke out. Frederick the Great marched against Dresden, and burned, among other things, the Brühl library, but not before H. had edited, from a *codex* there, the *Enchiridion* of Epictetus. For some time he led a precarious life, often without employment, and without bread. In 1761, he married, and supported himself as best he could by writing for booksellers; and 1763, on the death of Gessner, prof. of rhetoric at Göttingen, he was appointed his successor on the recommendation of Rhunken of Leyden (who had not forgotten his editions of *Tibullus* and *Epictetus*). This closed his period of misfortune. The rest of his long life was spent in peace and comfort and professorial activity. The principal works of H., besides those above mentioned, are his editions of Virgil (1767, 6th ed. 1803), Pindar (1774), Apollodorus (1787), Pliny (1790), Conon and Parthenius (1798), and Homer (8 vols. 1802; 2d ed. 1804). He also executed 'almost a cart-load of translations,' besides 'some ten or twelve thick volumes of Prolusions, Eulogies, and Essays,' of which six vols. were published separately under the title of *Opuscula Academica* (Götting. 1785-1812); and finally, about 7,500 reviews of books in the *Göttinger Gelehrten Anzeigen*, of which he was director from 1770. In addition to this herculean work, he had a private class or *Seminarium* for the advanced study of philology and classical antiquity, from which he sent forth no less than 135 professors. His labors were of large effect in giving the Univ. of Göttingen its high rank among German universities. Compare the Life of H. by his son-in-law, Ludwig Heeren (Götting. 1813), and Carlyle's essay on the same.

HEYWARD, *hā'wērd*, THOMAS, Jr.: 1746-1809, Mar. 6; b. St. Luke's Parish, S. C.: signer of the Declaration of Independence. He was son of a wealthy planter, received a private education, studied law in London, became a leader in the early revolutionary party in S. C., was a member of the first committee of safety and of congress 1775-78, was appointed judge of the criminal and civil court of S. C. 1780, the same year commanded a battalion of vols., and was taken prisoner on the surrender of Charleston; and after the war resumed his seat on the bench and was a member of the constitutional convention.

HEYWOOD, *hā'wūd*: large and populous town of Lancashire, England. 8 m. n. of Manchester, on the left bank of the Roach, branch of the Irwell. It is connected with the Rochdale canal by a branch canal; and it is on the Lancashire and Yorkshire railway. H. has recently increased with great rapidity in population and wealth, partly in consequence of extensive coal-mines in the neighborhood, and partly through manufactures of various kinds. It is an important seat of the cotton manufacture. Fustians,

HEZEKIAH.

calicoes, nankeens, ticks, and other cotton fabrics are produced. Iron-founding, boiler-making, and the manufacture of power-looms, are extensively carried on. Pop. (1881) 23,050; (1891) 23,286.

HEZEKIAH, *hēz-ē-kī'ah* [Heb. *Hiskiah*, *Yehiskiyahu*, 'Jehovah strengthens'], King of Judah: prob. B.C. 742-688: son and successor of Ahaz, whom he succeeded at the age of 25 (II K. xviii. 2). There is some confusion in the chronology at this point: the usual chronology assigns his reign to B.C. 725-696; but decipherments of the Assyrian inscriptions, with collation of the scriptural accounts, make probable the period B.C. 717-688. 'There was none like him among all the kings of Judah,' is the praise bestowed upon him II K. xviii. 5; and scarcely less is the praise given, II Chron. xxix. From his accession to the throne, his efforts seem to have been directed chiefly to the abolition of the idolatry which filled the land, and the restoration of the worship of Jehovah to its pristine purity and glory. The temple was reopened, the Priests and Levites whose genealogies had proved correct had their ancient revenues assigned to them, and recommenced the daily service; and the first passover in H.'s reign, was—although a month after the appointed season—celebrated with almost unparalleled pomp for full 14 days, amid a vast concourse of people, not only of Judah, but even of Israel. Victorious in wars with the Philistines, and relying on an Egyptian alliance, into which he had entered against the warning of the prophet Isaiah. H. dared also to withhold the annual tribute imposed by Shalmanassar in the days of his father: whereupon, as appears from cuneiform records, Sargon, Shalmanassar's successor, invaded Judea, but without success. When, however, Sargon's successor, Sennacherib, on his way to Egypt and Ethiopia, had already seized Lachish, or, according to Chron. and Isaiah, 'all the fortresses' of Judea, nothing remained for H. but to ask for peace, and to offer any ransom that Sennacherib might impose. Sennacherib took an enormous sum in silver and gold, for which the sacred treasury and the very doors of the temple were laid under contribution:—perhaps only a stratagem to convince the conqueror of the poverty of the royal coffers. It is doubtful whether Sennacherib, after having received the money given to procure the peace, treacherously marched upon Jerusalem at once, or whether he continued his march to Egypt, and being beaten there before Pelusium, besieged Jerusalem on his return—which would be equal to a second invasion. H.'s efforts to render his capital impregnable were futile. Suddenly, however, 'an Angel of the Lord' (explained by some commentators variously to mean the plague, an earthquake, a sudden attack by King Tirhaka of Egypt, or the Simoom) *slew* during a single night 180,000 men in the Assyrian camp, and Sennacherib was compelled to retreat. Whether H.'s illness—'Shechin,' ulcers, according to some, or the plague, as others understand that word—was before or after Sennacherib's invasion, is not fully established; certain it is, that after his miraculous recovery, indicated to him by the

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retrograde movements of the dial, he, among other visits of congratulation, received that also of the ambassadors of Merodach Baladon (Mardocampados), King of Babylon. The latter—as appears from the Chaldean historian Berosus—was at that time likewise tributary to Assyria, and sent the embassy with a view to securing H.'s co-operation against the common enemy. H. imprudently made a great display of his treasures, his magazines, and arsenals; but so far from impressing the messengers with his greatness, he only kindled in Merodach Baladon the desire to possess himself of all these things; and the later Babylonian invasion ending in the captivity of Judah, is undoubtedly to be traced back to this act of vanity on the part of Hezekiah.

The remainder of H.'s life was passed in profound peace and prosperity, so that he was enabled to turn his attention to the internal development of the resources of the country, and the fortification of its towns. He collected great treasures and executed many useful works, among which the aqueducts of Jerusalem were foremost. His was also the golden age of prophetic poetry. Besides Isaiah, there lived in his time the prophets Micah and Nahum. From a passage in Prov. xxv 1, it appears that he founded a society of literati, who collected and arranged the ancient documents of Hebrew literature, especially the Proverbs which passed under the name of Solomon. H. himself was a poet of no low order; witness the hymn that he composed after his recovery. H. was succeeded by his son Manasseh.

HIATUS, n. *hī-ā'tūs* [L. *hiātūs*, an opening, a cleft—from *hīō*, I open or gape: F. *hiatus*]: the opening of the mouth in pronouncing words or syllables, when a vowel follows a vowel; the effect so produced; a defect in a MS.; a gap; an opening.

HIBERNACULA, n. *hī'bér-nāk'ū-lă* [L. *hibernacula*, winter quarters]: a name applied to the leaf-buds, as the winter quarters of the young branches; the winter quarters of a wild animal, or of a plant.

HIBERNAL: see under **HIBERNATE**.

HIBERNATE, v. *hī'bér-nāt* [L. *hibernā*, winter quarters, houses for winter]: to pass the winter in a state of seclusion or sleep, as certain wild animals do. **HIBERNATING**, imp.: **ADJ.** having the nature of that which hibernates. **HIBERNATED**, pp. **HIBERNATION**, n. *-nā shŭn*, the act of spending winter in seclusion or sleep. **HIBERNAL**, a. *-năl* [F.—from L. *hibernālis*]: of or belonging to winter. *Note*.—The preceding words are sometimes spelled with *y* for *i*.

HIBERNATION: peculiar condition of retirement and sleep in which certain animals—chiefly cheiroptera and rodentia—pass the winter. It is not clearly known to what extent H. prevails in the animal kingdom. The bats, the hedgehog, the badger, and the dormouse are striking examples of this phenomenon. The term H. is not good, because summer heat produces in some animals a condition very

HIBERNIA.

similar to that which winter cold produces in others; hence the Germans use the words *Winterschlaf* (winter sleep) and *Sommerschlaf* (summer sleep) to express the two similar if not identical conditions.

The following are the most marked peculiarities presented by bats, hedgehogs, and dormice when in perfect H.: The respiration is very nearly suspended, as is shown (1), by the absence of all detectable respiratory acts; (2), by the almost entire absence of any change in the air in the bell-jar or case in which the animal is placed during the investigation; (3), by the subsidence of the temperature to that of the atmosphere; and (4), by the capability of supporting, for a great length of time, the entire privation of air. The circulation is reduced to an extreme degree of slowness. In an observation made by Dr. Marshall Hall, the heart of a bat was observed to beat only 28 times in the minute. The excretions are very scanty. The bat is observed to have scarcely any excretion during its continued lethargy. In regard to the nervous system, sensation and volition are quiescent, but reflex or excito-motary actions are readily produced. The slightest touch applied to one of the spines of a hedgehog, or the merest shake given to a bat, induces one or two inspiratory movements. Dr. Marshall Hall made the important discovery that, while the respiration is almost totally suspended, the muscular irritability is proportionally augmented. All hibernating animals instinctively adopt various measures to secure themselves, during the lethargic period, from disturbance and excitement. They choose sheltered and retired situations, as caves, burrows, etc. Some form themselves nests; others congregate in large numbers. The hedgehog and dormouse roll themselves up into a ball; the bats group together in clusters, with the head downward, and in some species the wings are spread, so that each individual embraces and shelters its neighbor. Revivescence is due partly to the return of warmth, but mainly in all probability to the calls of hunger. The return of the respiration and animal heat to the normal standard is very gradual.

The physiological use of H. is doubtless to enable certain animals to avoid the consequences of severe winter cold, and (especially in the case of the insectivorous animals) the deprivation of food. Before the period of H., a large amount of fat is accumulated in the organism; this constitutes the fuel on which the animal lives and supports its low degree of heat during the winter. The other tissues suffer to less extent, and the total loss of weight is some-nearly times 40 per cent.—a proportion fully as great as that usually sustained in death by starvation. See ANIMAL HEAT: and for full account of the phenomena of H., see Barkow, *Der Winterschlaf nach seiner Erscheinungen im Thierreich dargestellt* (Berlin 1846).

HIBERNIA, *hī-bēr'nī-a*, or IBERNIA, *ī-bēr'nī-a*, or IVERNIA, *ī vēr'nī-a*, also IERNE, *ī-ēr'nē*: names by which Ireland is designated in the classical writers. The first mention of Ireland in ancient times occurs in a poem on the Argonautic expedition, attributed to the mythical Orpheus, and

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perhaps as early as the time of the first Darius. Aristotle speaks of two islands in the ocean beyond the pillars of Hercules, 'called Britannic, very large, Albion and *Ierne*, beyond the Celtæ.' Both Diodorus Siculus and Strabo report the natives to be addicted to cannibalism, but, by the admission of both writers on insufficient grounds. Pomponius Mela, with quite an Irish warmth of eulogy, declares the herbage to be so luxuriant that the cattle who feed on it sometimes burst. Pliny repeats this statement, and adds that the Hibernian mother trains her child from the very first to eat food from the point of a sword. But the most important of all classical authorities on H. is Ptolemy, who describes the country, and gives the names of the principal rivers, promontories, seaports, and inland towns. The island was never conquered, nor even explored, by the Romans. See IRELAND.

HIBERNIAN, a. *hĩ-bér'nĩ-ăn* [L. *Hiberniā*, Ireland]: of or pertaining to Hibernia or Ireland: N. an Irishman. HIBERNICISM, n. *-nĩ-sĩzm*, a mode of speech peculiar to the Irish; an Irish idiom. HIBERNIC-CEL'TIC, a. the native Irish language.

HIBISCUS, n. *hĩ-bĩs'kũs* [L. *hibiscum*; Gr. *hibiskos*, the marsh-mallow]: genus of plants of nat. ord. *Malvaceæ*, type of tribe or sub-order distinguished by a double calyx and fruit of three or more many-seeded carpels united into a many-celled capsule. The species are numerous, natives of warm climates, some of them trees or shrubs, but most of them large herbaceous plants, annual or perennial. The flowers of many are very beautiful. *H. Syriacus*, sometimes called *Althæa frutex*, native of Syria and Carniola, has long been in cultivation as an ornamental shrub, and proves hardy in some more northern lands. Some are favorite hothouse plants. The characteristic mucilaginous and fibrous properties of the *Malvaceæ* are very strongly developed in this tribe. *H. Abelsonschus* (or *Abelsonschus esculentus*) so abounds in mucilage that it is much used in n.w. of India for clarifying sugar. The fruit of *H. esculentus* (or *Abelsonschus esculentus*) is in general use both in the E. and in the W. Indies for thickening soups, and otherwise as food; it is much used also in the southern states. It is called GUMBO, GOMBO, GOBBO, and OCHRA, or OKRO in the W. Indies; BANDIKAI, RAM-TURAI, and DENROOS in different parts of India; and BAMMIA in w. Africa; if indeed the E. Indian *H. longifolius* and the African *H. Bammia* are, as seems probable, mere varieties. It is an annual plant, with a soft, herbaceous stem, 3-5 ft. high, crenate leaves, axillary, sulphur-colored flowers, and pyramidal, somewhat podlike capsules. It is cultivated in some parts of s. Europe. The fruit is used in an unripe state. It is generally much esteemed, but is disliked by some on account of its viscosity. It enters as an important ingredient into the *pepper-pot* of the W. Indies. The ripe seeds are sometimes used in soups as barley. The bark of *H. tiliaceus*—a tree 20 ft. high with a very thick bole—so abounds in mucilage that by chewing it the natives of the South Sea Islands obtain

HICCUP.

nourishment in times of scarcity. This tree, the **BOLA** of Bengal—supposed to be the same with the **MOHO** or **MOHAUT** of the W. Indies (*A. arboreus*)—is one of the most abundant trees of the South Sea Islands; and the wood being light, tough and durable, is used for many purposes. The bark is very fibrous, and cordage and matting are made of the fibre in various tropical countries. Many other species yield fibres, some coarse, some fine and beautiful, which are used in different countries; but the most important in this respect is *H. cannabinus*, the **AMBAREE HEMP** and **DECKANEE HEMP** of w. India, called **PALUNGOO** at Madras, and **MAESTA PAUT** in Bengal; a plant generally cultivated in all parts of India, though nowhere in great quantity. It is an annual herbaceous plant; having a straight, unbranching stem 3-7 ft. high. The fibre is not so strong as hemp, and is useful only for ropes and coarse fabrics. It has been suggested that many species of *H.* might be found valuable for manufacture of paper.—*H. Sabdariffa* is generally cultivated in warm countries, on account of its calyx, which, as the fruit ripens, becomes fleshy, and acquires a pleasant acidity. It is much used for making tarts and jelly, and a decoction of it, sweetened and fermented, affords a refreshing beverage, well known in the W. Indies as *Sorrel Cool Drink*, the plant being called **RED SORREL**. *H. Abelsonchus* (or *H. Abelsonchus moschatus*), sometimes called **MUSK SEED**, another plant common in widely separated tropical countries, is cultivated for its seeds, which have a fragrance between that of musk and that of amber. They are much used by perfumers, and are called *Ambrette* or *Graines d'Ambrette*. In Egypt and Arabia they are mixed with coffee; and stimulant and stomachic qualities are ascribed to them. The petals of *H. Rosa-Sinensis* are astringent, and are used by the Chinese to stain their eyebrows and their shoes black.

HICCUP, or **HICCUGH**, n. *hik'up* [Dut. *huckup*; Bret. *hik*; F. *hoquet*, hiccup; Dut. *hikken*, to sob: an imitative word: comp. Gael. *iach*, to gasp; *acain*, a sigh: W. *ig*, a hiccup; *igio*, to sob]: sudden short convulsive inspiration, attended with a peculiar sound produced in the larynx, and immediately followed by expiration. The movements concerned in the production of *H.* are a spasmodic contraction of the diaphragm, and a certain degree of constriction in the glottis, which occasions the peculiar sound, and limits the amount of air inspired. These convulsive inspirations commonly occur in paroxysms, and succeed each other at intervals of a few seconds. The paroxysm may last only a few minutes, or may extend to hours or days; in the last-named case, it may be dangerous to life, from the exhaustion which it causes. but usually it merely excites a feeling of uneasiness or slight pain about the region of the diaphragm. A debilitated state of the system predisposes to hiccup. In those predisposed to it, any gastric derangement, as emptiness, or overdistension of the stomach, the ingestion of cold water, excessive acidity, etc., will provoke it. Certain diseases are frequently attended by it.—When the attack is

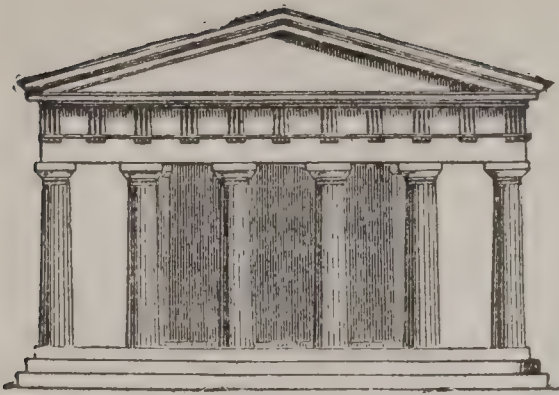
HIC-JACET—HICKOK.

slight, it may often be stopped by making a very full inspiration, and then holding the breath as long as possible, the diaphragm being thus held in a state of voluntary contraction. Strong pressure, as a belt tightly drawn round the waist will sometimes give relief. In more obstinate cases, aromatic spirit of ammonia, camphor, musk, etc., may be resorted to. A combination of camphor and chloroform (used only under medical advice), and the frequent swallowing of small rounded pieces of ice, are perhaps the most efficient remedies. **HICCUP**, v. to have the hiccup; to utter a short choking cough. **HICUPPING**, imp. **HICUPPED**, pp. -kūpt. *Note.*—The spelling *hiccough* is due to popular etymology, from the mistaken idea that it was a simple compound of *hic* and *cough*.

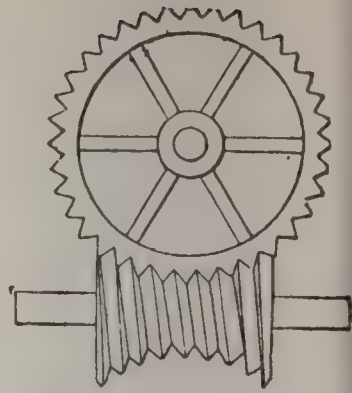
HIC-JACET, *hīk-jä'sēt* [L. here lies]: commonly the first two words on a tombstone; thence used as a noun in the sense of tombstone, grave.

HICKES, *hīks*, **GEORGE**, D.D.: 1642, June 20—1715, Dec. 15; b. Newsham, Yorkshire: learned English non-juring clergyman and philologist. He studied at Oxford, and 1664 was elected fellow of Lincoln College. In 1665 he passed M.A., and 1666 was admitted into orders. In 1676 he became chaplain to John, Duke of Lauderdale. In 1678 he received the degree D.D. from the Univ. of Glasgow, and 1679 from that of Oxford. In 1682 he was appointed one of the king's chaplains, and the following year made dean of Worcester. Refusing at the revolution to take the oaths to King William III., he was deprived of all his benefices: see **NON-JURORS**. In 1693 he was sent with a list of the nonjuring clergy to the exiled king at St. Germain's, and in 1694 was consecrated by a prelate of his own party suffragan bishop of Thetford. His publications in controversial and practical divinity are numerous. His greatest work, entitled *Thesaurus Grammatico-Criticus et Archaeologicus Linguarum Veterum Septentrionalium*, appeared at Oxford 1705, 3 vols. fol.

HICKOK, *hīk'ok*, **LAURENS PERSEUS**, D.D., LL.D.: 1798, Dec. 29—1887, May 7; b. Danbury, Conn.: educator. He graduated at Union College 1820, studied theology, was ordained pastor of the Congl. Church at Kent, Conn., 1824, succeeded Lyman Beecher, D.D., in the Congl. Church at Litchfield, Conn., 1829, became prof. of theol. in Western Reserve College, O., 1836, and in Auburn Theol. Seminary 1844; removed to Schenectady, N. Y., on being elected vice-pres. and prof. of mental and moral philosophy in Union College, 1852; assisted Pres. Nott in the govt. of the college till 1860, then had sole charge till Pres. Nott's death 1866, and was pres. 1866, Mar. 1—1868, July 20, when he resigned and settled in Amherst, Mass. The latter years of his life were passed in philosophical study, occasional preaching, writing for religious periodicals, and in other literary work. Beside his contributions to *The Christian Spectator*, *Bibliotheca Sacra*, *Biblical Repository* and *Presbyterian Quarterly*, he published *Rational Psychology, or the Subjective Idea and Objective Laws of all Intelli-*



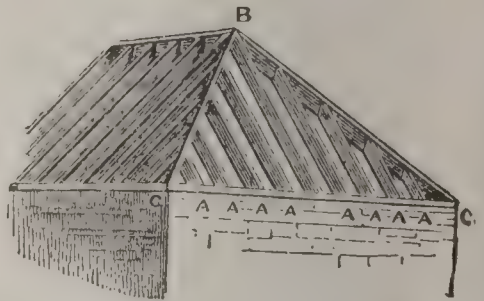
Hexastyle.—Temple of Jupiter Panhel-
lenius, Ægina.



Hindley's Screw.



Hibiscus Articulatus.



Hip.—A, A, A, A, Jack-rafters; BC,
BC, Hips or hip-rafters.



Hibiscus esculentus—upper part of a
flowering plant: *a*, Unripe fruit; *b*, Sec-
tion of ditto.



a, Hilum in Common Garden
Bean.



Hip-knob, Friar-gate, Derby.

HICKORY—HICKS.

gence (1848); *System of Moral Science* (1853); *Empirical Psychology, or the Human Mind as given in Consciousness* (1854); *Rational Cosmology, or the Eternal Principles and the Necessary Laws of the Universe* (1858); *Creator and Creation, or the Knowledge in the Reason of God and His Works* (1872); *Humanity Immortal, or Man Tried, Fallen, and Redeemed* (1872); and *Rational Logic, or True Logic must strike Root in Reason* (1875). He received the degree D.D. from Hamilton College 1843, and LL.D. from Amherst College 1866. His thought was strong and profound; and his tendency to develop a philosophical system of his own—though his system has perhaps not been generally apprehended—gives his writings an original charm and great richness of suggestion.

HICKORY, *n.* *hík'ôr-î* (*Carya*): genus of trees formerly included among Walnuts (*Juglans*), with which they are closely allied, having as their chief difference that in the H. the husk which covers the shell of the nut separates into four valves; while in the walnut, it is in one piece and bursts irregularly. The Hickories are exclusively North American. They are large and beautiful trees, attaining a height of 70 or 80 ft., with pinnate leaves. The timber of all of them is very heavy, strong, elastic, and tenacious, but decays speedily when exposed to heat and moisture, and is said to be peculiarly liable to injury from worms. Great quantities of H. are used to make hoops for casks. It is much used for handspikes. Shafts of carriages, handles of whips and golf-clubs, large screws, etc., are made of it. It is greatly esteemed for fuel, burning brightly and giving strong heat. The nuts of some of the species are excellent eating, and much resemble walnuts—*C. alba*, the SHELL-BARK or SHAG-BARK H., so called from its shaggy outer bark peeling off in long narrow plates, yields the common *hickory-nut* of the northern states, also known as the *Kisky Thomas Nut*. It abounds in many parts of the country. The trunk is slender. The leaves are often 20 inches long. The nuts are in considerable request, and are sometimes exported. The shell is thin but hard, the kernel sweet. An oil, used by the Indians as food, is obtained from it by pounding and boiling.—*C. sulcata*, the THICK SHELL-BARK H., a very similar tree, abounding in the fertile valleys of the Alleghany Mountains, has a nut with a thick yellowish shell, often brought to market, under the names of Springfield Nut and Gloucester Nut.—*C. olivæformis* yields the PACANE, or PECAN NUT, sometimes called the Illinois Nut.—Other species yield the MOCKER NUT, PIG NUT, and BITTER NUT.

HICKS, *hîks*, ELIAS: 1748, Mar. 19—1830, Feb. 27; b. Hempstead, N. Y.: eminent preacher of the Society of Friends. His gifts were early recognized by the society, and at the age of 27 he had become a well-known preacher, and for many years travelled through the States and Canada. His unitarianism, or denial of the doctrine generally held as to the divinity of Christ, with his denial of a vicarious atonement, brought him into disfavor with orthodox

HICKS—HICKS-PASHA.

Friends; but he preached his own views with perseverance, and at the age of 80 still travelled and preached. The result of his labors was a schism of the society into two divisions, popularly known as Orthodox and Hicksite Quakers, through H. himself never accepted the last as a proper designation. He was an early and uncompromising opponent of slavery. He died at Jericho, N. Y. See Elias H.'s *Journal of his Life and Labors* (Philadelphia 1828); also a vol. of Sermons, Observations on Slavery, and a *Doctrinal Epistle*.

HICKS, *hiks*, THOMAS: 1823, Oct. 18—1890, Oct. 8; b. Newtown, Penn.: artist. He received an academical education; studied painting in the Penn. Acad. of Fine Arts, and (1838) in the National Acad. of Design; made his first exhibition—*The Death of Abel*—in the National Acad.'s exhibition 1841; studied in London, Paris, Florence, and Rome 1845–49; and opened a studio for portrait-painting in New York 1849. While abroad he painted his half-length figure *Italia*. He was elected a member of the National Acad. of Design 1851, was pres. of the Artists' Fund Soc. of New York 1873–85, and has painted portraits of many eminent Americans, a group of American authors, and one of the governors of N. Y.

HICKS, THOMAS HOLLIDAY: 1798, Sep. 2—1865, Feb. 13; b. Dorchester co., Md.: statesman. He was brought up on a farm, received a dist. school education, engaged in mercantile pursuits 1831, was elected to the legislature 1836, register of wills 1838, member of constitutional convention 1849, gov. of Md. 1858–62, appointed U. S. senator as a republican to fill vacancy, elected for full term, and served from 1863 till death. He was a strong Union man during the civil war, and refused to call a convention to consider the projected secession of his state even when officially requested to do so.

HICKS-BEACH, Sir MICHAEL EDWARD: statesman; b. London, 1837, Oct. 23. He was educated at Eton and Christ Church, Oxford, graduated B.A. 1858, promoted first class in law and modern history, and graduated M.A. 1861; was elected member of parliament 1864; was parliamentary sec. to the poor-law board 1868, and part of the time under-sec for the home dept.; became chief sec. for Ireland as a conservative 1874; was admitted to the cabinet 1877; sec. of state for the colonies 1878, Feb.—1880, Apr.; chancellor of the exchequer and leader of the commons under Lord Salisbury 1885, June—Nov.; re-elected member of parliament 1886; succeeded John Morley as chief sec. for Ireland; and was appointed pres. of the board of trade by Lord Salisbury 1888.

HICKS-PASHA, *hiks-pâ-shá'* (Col. WILLIAM HICKS): b. England; died 1883, Nov. 4: soldier. He entered the Indian (British) army 1849, served through the Sepoy rebellion, took part in the campaign for the subjugation of Oude and the subsequent actions with Nana Sahib, was brigade-maj. and received a medal and the brevet of maj. for services at the capture of Magdala, Abyssinia, 1868,

HICRA-PICRA—HIE.

and became an hon.col. and was appointed to the reserve 1880. He went to Egypt with the British expedition, became chief of staff in the reorganized Egyptian army and commander-in-chief of the Soudan army, led an expedition of more than 10,000 men against El Mahdi, 1883, Sep.; and was killed with a large part of his army near El-Obeid at the close of a three days' battle.

HICRA-PICRA: see **HIERA-PICRA**.

HIDALGO, n. *hĩ-dũl'gõ* [Port. *Fidalgo*; Sp. *hijo*—from L. *filium*, a son, and *algo*—from *aliquod*, something i.e. 'son of somebody']: in *Spain*, a nobleman of the lowest class.

HIDDENITE, *hĩd'en-ĩt*: emerald-green crystal from $\frac{1}{2}$ in. to 3 in. long; discovered by I. A. D. Chamberlain in Alexander co., N. C., 1876, and named after Prof. W. E. Hidden, who announced its discovery and described it 1879. It has since been adopted by jewellers as a gem of the first order, and as it commands the same price per carat as the diamond, it is entitled to be considered the only precious stone found in the United States exclusively.

HIDE, v. *hĩd* [Dut. *hoeden*, to keep, to protect: W. *huddo*, to cover: Norw. *hide*, the lair of a beast]: to be withdrawn from sight; to conceal; to keep secret. **HID'ING**, imp.: N. concealment. **HID**, pt. *hĩd*, did hide. **HIDDEN**, pp. *hĩd'n*, concealed: **ADJ.** that cannot be seen or known; secret; mysterious. **HIDER**, n. *-dẽr*, one who. **HID'DENLY**, ad. *-li*. **HIDE-AND-SEEK**, a child's amusement, in which some hide and others seek. **HIDING-PLACE**, a place of concealment.—**SYN.** of 'hide': to cover; secrete; screen; shelter; disguise; dissemble; withhold; defend.

HIDE, n. *hĩd* [AS. *hyd*; Ger. *haut*; Dut. *huyd*; Icel. *hud*, skin of a beast; *hyda*, to skin a beast, to give a flogging to]: the skin of a horse, ox, or other large animal (see **LEATHER**): **V.** to give a flogging to. **HID'ING**, n. *hĩ-dĩng*, in *familiar language*, a beating. **HIDE'BOUND**, a. applied to a disease of cows and horses characterized by a morbid tightness of the skin; having the bark so close and firm as to impede growth—said of trees; hard; niggardly.

HIDE, n. *hĩd* [AS. *higid*, an estate sufficient for one family]: an anc. measure of land of about 100 acres, or as much as could be tilled by a single plow. **HIDAGE**, tax formerly paid to the kings of England for every hide of land: the word sometimes meant exemption from that tax.

HIDEOUS, a. *hĩd'ĩ-ũs* [F. *hideux*, hideous: OF. *hisdeux*, and *hidour*, dread—from mid. L. *hispidōsũs*, roughish: Sw. *hasna*; Low Ger. *huddern*, to shudder]: horrible, frightful to the sight; exciting terror; in *OE.*, detestable. **HID'EOUSLY**, ad. *-li*, in a manner that shocks; dreadfully. **HID'EOUSNESS**, n.—**SYN.** of 'hideous': horrid; dreadful; shocking; formidable; frightful; ghastly; grim; grisly; terrible.

HIE, v. *hĩ* [AS. *higan*, to endeavor: Dut. *hiighen*, to pant: comp. Gael. *thig*, to come]: to come or go; to hasten; to go in haste. **HIE'ING**, imp. *hĩ'ing*. **HIED**, pp. *hĩd*.

HIEMAL—HIERARCHY.

HIEMAL, a. *hî-ê'māl*: see **HYEMAL**.

HIERACIANS, n. *hî-êr-ā'sî-anz*, or **HIERACITES**, n. *hî-êr-a-sîts*: in *eccles.* and *chh. hist.*, followers of Hierax, Bp. of Leontopolis, a book-copier, who flourished toward the close of the 3d c. He believed that Jesus promulgated a law much more strict than that of Moses; therefore those Christians who aspired after the highest attainments, were enjoined to abstain from flesh, wine, marriage, etc. He allegorized Scripture, denied the resurrection of the body, and excluded those who died in infancy from the kingdom of heaven.

HIERA'CIUM: see **HAWKWEED**.

HIERA-PICRA, n. *hî-êr-ă-pîk'ră* [Gr. *hîērōs*, sacred; *pîkrōs*, bitter]: a popular remedy in domestic practice for constipation, known by the name *hickory pickory*, or *hiera picra*, sometimes *Holy Bitter*; composed of four parts of powdered aloes and one part of canella; identical with the officinal preparation *Pulvis Aloës cum Canellâ*. The principal objection to its use as a purgative is, that the nauseous taste of the aloes is not concealed by the canella, and that, like aloetic preparations generally, it is liable to cause irritation of the lower part of the intestinal canal.

HIERARCH, n. *hî-êr-ârk* [Gr. *hîērōs*, sacred; *archos*, a ruler or prince]: the chief of a sacred order. **HIERAR'CHAL**, a. *-âr-kâl*, pertaining to hierarchy or sacred government; also **HIERAR'CHICAL**, a. *-kî-kâl*. **HIERAR'CHICALLY**, ad. *-lî*. **HIERARCHY**, n. *-âr-kî*, ranks or orders of the sacred ministry, commonly applied to the order of churches governed by prelates (see **HIERARCHY**, below); the priesthood. **HIERAT'IC**, a. *-ât'ik*, pertaining to priests or to sacred uses. **HIERATIC WRITING**: see **HIEROGLYPHICS**. **HIERARCHISM**, n. *-âr-kîsm*, church government by a hierarchy. **HIEROC'RASY**, n. *-ôk'ră sî* [Gr. *krâtēō*, I am strong or powerful]: government by priests; hierarchy.

HIERARCHY: the whole sacred governing and ministering body of the church, distributed according to its several gradations. The word, in strict acceptation, is applicable only to the Rom. Cath. Church, and to those bodies which are under the prelatical form of church government, or which at least maintain the distinctions of ecclesiastical order and gradation. In considering the H. of the Rom. Cath. Church, it is necessary to bear in mind the well known distinction of *order* and of *jurisdiction*. I. Considered under the head of *order*, the H. embraces all the various orders or classes of sacred ministers to whom has been assigned the duty of directing public worship, administering the sacraments, and discharging the various other offices connected with the oversight of the general church or of its local congregations; and these are of two kinds—the orders directly instituted by divine authority, and those established by ecclesiastical ordinance. Theologians maintaining a H. commonly distinguish a *hierarchy of divine right* and a *hierarchy of ecclesiastical right*. (1.) The first includes the three ranks of bishops, priests, and deacons. The bishops are believed, as successors of the apostles, to

HIERO I.

have inherited the integrity of the Christian priesthood. The order of episcopate, however, is not believed to be a distinct order from that of priesthood, but rather a fuller and entirely unrestricted form of that order. In all that regards what Rom. Catholics believe to be the Christian sacrifice of the eucharist, they hold that the priest possesses the same powers *of order* with the bishop; but he cannot confer the sacrament of orders, nor can he validly exercise the power of absolving in the sacrament of penance without the approbation of the bishop. The office of deacons is, to serve as helpers of the priests and bishops, especially in the administration of the eucharist and baptism, and in the relief of the material as well as the spiritual necessities of the faithful (Acts vi. 1, and foll.). (2.) To the three ranks held to have been thus primitively instituted, several others have been added by ecclesiastical ordinance: see ORDERS, MINOR. II. The *hierarchy of jurisdiction* directly regards, and is founded on, the government of the church, and it comprises not only all the successive degrees of ecclesiastical authority derived from the greater or less local extension of the several spheres within which such governing authority is limited—beginning with the pope as primate of the universal church, and extending to the patriarchs as ruling their several patriarchates, the primate in the several kingdoms as national churches, and the metropolitans or archbishops within their respective provinces;—but also, though less properly, the ecclesiastical grades which, although ecclesiastical jurisdiction may be attached to them, are more directly honorary in their nature, as those of the cardinalate, the archipresbyterate, and the archidiaconate.

In the Anglican Church and its derived churches, the theory of a hierarchial gradation of rank and of authority has been retained with the office of the episcopate. The Anglican H. comprises bishops, priests, and deacons. In the Scottish Church (Presb.) it is of course unknown, as it is in the greater number of the foreign Prot. churches; while those Lutheran communities which have retained or have revived the title of bishop, concede little to the office which can be considered as imparting a strictly hierarchical character to the distinction of grades in the ministry which it imports. The Lutheran bishop has little beyond his brother-ministers, except the right to bear certain insignia, and the first place in the consistories.

In the well-known work, *The Celestial Hierarchy*, falsely ascribed to Dionysius the Arcopagite, the H. includes Christ as its head, and the various orders of Angels as his ministering spirits.—See APOSTLE: ARCHBISHOP: BISHOP: CARDINAL: CHURCH: CLERGY: DIOCESE: EPISCOPACY: EXARCH: PATRIARCH: POPE.—The word H. is sometimes improperly applied to the whole system of gradation and rank, including the official persons, in a military organization.

HIERO, *hî'é-rô*, I., Tyrant (i.e. King) of Syracuse: succeeded his brother Gelon B.C. 478; d. B.C. 467, at Catana (reigned B.C. 478–467). The most important event of his reign was the naval victory of his fleet and that of the Cy-

HIERO II.—HIEROCLES.

mani over the Etruscans 474, which deprived the latter of their supremacy in the Tyrrhenian Sea. In 472, Thrasidæus, who had become tyrant of Agrigentum, was conquered by Hiero. H. himself was violent and rapacious, of worse character than his brother Gelon. His love of poetry, and the manner in which he entertained poets like Simonides, Æschylus, Bacchylides, and Pindar at his court, have perhaps caused him to be overestimated.

HIERO II., Tyrant (i.e. King) of Syracuse: b. previous to B.C. 306; d. B.C. 216 (reigned B.C. 270–216): son of a noble Syracusan named Hierocles. During the troubles in Sicily, after the retreat of King Pyrrhus, B.C. 275, H. greatly distinguished himself, and was first appointed commander-in-chief, and then elected king. He joined the Carthaginians in besieging Messana, which had surrendered to the Romans. But he was beaten by Appius Claudius the Roman consul, and obliged to retire to Syracuse, where he was soon blockaded. In 263, threatened by a large army under Manius Valerius Maximus, he concluded a peace with the Romans for 15 years, during which he proved so faithful to his engagements, that in 248 peace was permanently established. H. himself visited Rome 237, on which occasion he presented the Roman people with 200,000 bushels of corn. In the second Punic war he likewise proved himself the faithful ally of the Romans, and supported them with money and troops, especially after defeat at the lake of Thrasymene, when the golden statues of the goddess of Victory, weighing 320 pounds, which he sent to Rome, were welcomed as a good omen. His son Gelon having died before him, he was succeeded by his grandson Hieronymus. H., by his clemency, wisdom, and simplicity, had gained the affections of the Syracusans, who refused on several occasions to accept his resignation of the kingly office. He gave great attention to the improvement of agriculture, and his laws respecting the tithe of corn, etc. (*Leges Hieronicae*), were still in force in the country in Cicero's time. He was a patron of the arts, particularly architecture. In these pursuits, as well as in the construction of war-like machines, he was assisted by his friend and relative Archimedes.

HIEROCLES, *hî-ēr'o-klîz*: Neo-Platonic writer of the middle of the 5th c.; b. prob. in Alexandria; d. prob. abt. 490. He had very great reputation. He is usually reckoned author of a commentary on the golden verses of Pythagoras, of which the best ed. is by Warren (Lond. 1742). Of H.'s history we know nothing. His most celebrated works are—*On Providence, Fate, and the Harmony between the Divine Government and Man's Freewill*; of which there remain only a few extracts preserved by Photius, published by Morelli (Paris 1593 and 97). He maintained a general but not a particular providence, and the entire freedom of the individual will as against Divine foreknowledge; the only thing that is fore-ordained being the connection between volitions and their natural consequences. Another ethical work by H., *On Justice. Reverence of the Gods, and*

HIEROGLYPH.

the Domestic and Social Virtues, is known to us from a number of extracts in Stobæus. There is also a work called *Asteia* ('a collection of jests and ludicrous stories') attributed to him, but it is now believed to belong to a much later age. This and the previous works are in Pearson and Needham's *Commentary on Pythagoras* (Cambridge 1709). **HIEROCLES** was a frequent Greek name.














HIEROGLYPH, n. *hî'ér-ô-glîf*, or **HÎEROGLYPH'IC**, n. -îk [Gr. *hîērōs*, sacred; *gluphō*, I carve]: a sacred character or symbol; the sculpture or picture-writing of anc. Egypt—generally used in the plu. **HIEROGLYPHICS** (q.v. below). **HÎEROGLYPH'IC**, a. -îk, or **HÎEROGLYPH'ICAL**, a. -î-kûl, expressive of some meaning by pictures or figures; emblematic. **HÎEROGLYPH'ICALLY**, ad -lî. **HÎEROGLYPH'IST**, n. one skilled in the reading of hieroglyphs. **HIEROGRAM**, n. *hî'ér-ô-grām* [Gr. *gramma*, a letter]: a species of sacred writing. **HÎEROGRAMMATIC**, a. -mât'îk, pertaining to a hierogram. **HÎEROGRAMMATIST**, n. a sacred writer. **HÎEROGRAPHY**, n. -ôg'ră-fî [Gr. *graphō*, I write]: sacred writing. **HÎEROGRAPH'IC**, a. -îk, or **HÎEROGRAPH'ICAL**, a. -î-kûl, pertaining to. **HÎEROL'OGY**, n. -ôl ô-jî [Gr. *logos*, a word]: the science of hieroglyphics. **HÎEROLOG'IC**, a. -lîj'îk, or **HÎEROLOG'ICAL**, a. -î-kûl, pertaining to. **HÎEROL'OGIST**, n. -jîst, one who is skilled in. **HÎEROMANCY**, n. -măn-sî [Gr. *manteia*, divination]: divination by observing the things offered in sacrifice. **HÎEROPHANT**, n. -fânt [Gr. *phainō*, I show, I explain]: in *anc. Greece*, a priest who initiated candidates into sacred mysteries and duties (see below). **HÎEROPHAN'TIC**, a. -îk, pertaining to.



HIEROGLYPHICS.

HIEROGLYPH'ICS: representations of natural or artificial objects used to express some meaning, especially those pictures or figures which the ancient Egyptians and Mexicans employed for that purpose—a sort of language. The term *hieroglyph* would, however, be more correctly applied to these figures. The number of those used by the ancient Egyptians was probably about 1,000, by which all the ideas requisite were expressed with correctness, clearness, and facility. The H. consist of representations of celestial bodies, the human form and its parts in various attitudes, animals, fishes, reptiles, works of art and attire, and fantastic forms. These were either engraved in relief, or sunk below the surface, on the public monuments and objects of hard materials suited for the glyptic art, or else traced in outline with a reed pen on papyri, wood, slices of stone, and other objects. The scribe, indeed, wrote from a palette or canon called *pes*, with pens, *kash*, from two little ink-holes in the palette, containing a black ink of animal charcoal, and a red mineral ink. The hieroglyphs on the monuments are sometimes sculptured and plain; at others, decorated with colors, either one simple tone for all the hieroglyphs, which are then called monochrome; or else ornamented with a variety of colors, and then called polychrome; and those painted on coffins and other objects are often first traced out, and then colored in detail. On the papyri and some few inferior materials, they are simply sketched in outline, and are called linear hieroglyphs. The hieroglyphs are arranged in perpendicular columns, separated by lines, or in horizontal, or distributed in a sporadic manner in the area of the picture to which they refer. Sometimes all these modes of arrangement are found together. One peculiarity is at once discernible, that all the animals and representations face in the same direction when they are combined into a text; and when mixed with reliefs and scenes, they usually face in the direction of the figures to which they are attached. When thus arranged, the reliefs and hieroglyphs resemble a ms., every letter of which should also be an illumination, and they produce a gay and agreeable impression on the spectator. They are written very square, the spaces are neatly and carefully packed, so as to leave no naked appearance of background. Generally, they are to be read from the direction in which they face, and the lines follow in the same succession, but many exceptions occur, in which they follow the reverse order, whether written horizontally or vertically, and this at all periods.





The hieroglyphs, in their nature, are divided into two great classes—*Ideographs*, or those which represent ideas; and *Phonetics*, or those which express sounds. No doubt, at the commencement of the language, ideographs only were employed; but the earliest known monuments, which date from the 3d dynasty more than 2,000 years B.C., are filled with phonetic hieroglyphs, showing that at that early period the principle of writing sounds had been completely developed. These hieroglyphs, at the most developed period of the language, comprised about one-third of the texts. The ideographs are divided into two classes—the


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simple ideographs, or those which express one idea; and the determinatives, used to indicate many. In both classes these ideographs are occasionally found preceded by phonetic groups, which give the sound of the idea that they are intended to express in the written language; the simple ideographs being found preceded by only one group; while the determinatives are preceded by many. The pure ideographs are of various classes: first, those representing the object directly, as , a dog, *uhar*, to express the idea dog; secondly those metaphorically conveying the required meaning, as , a woman beating a tambourine to indicate 'joy,' in which the action indicates the effect produced; thirdly, that in which the attribute is expressed by the figure of some object possessing it, as , a jackal, to indicate 'cunning' or 'craft;' a , flaming censer, to signify 'incense.' Or the direct action was often represented; as a bird fishing , to express the idea of fishing in general. Such a mode of depicting ideas in detail was suited only for elaborate monuments; and the number of ideographs required to express all ideas, would have been so many as to have overwhelmed the memory of the learner, and to have obscured the comprehension of the reader; therefore, to reduce the number of *ideographs*, a certain number of these hieroglyphs were used to express more ideas than one in the principal classes of thought. Thus, , a seated man, originally employed to signify man, was applied to all relationships, functions, and offices of men, as *atf*, father; *sen*, brother; *mer*, governor; *hentneter*, priest; *bak*, laborer: the special meaning which it conveyed being shown by the phonetic groups which preceded it. In the same way, all beasts or objects made of leather were expressed by a skin ; all precious stones or objects made of the same by a ring, ; all actions of locomotion by  two legs in the act of walking; and all actions in which the arms were used by , an arm holding a stick. The number of these signs may be computed at 175, and they resemble in their use those of the Assyrian cuneiform, in which, though to a less extent, the leading classes of thought were determined by a character prefixed to the phonetic group giving the particular idea. Thus, in the Assyrian, all names of men are preceded by , a single upright wedge; all countries by , three wedges disposed obliquely; and names of horned cattle by the group of five wedges . In the Egyptian system, however, the determinatives are always placed after the phonetic groups, and are more numerous. The Chinese system of writing approaches still more closely to the Egyptian, 242 radicals, as they are called, but really determinatives, being placed after other groups and symbols, which indicate the special idea intended. In the Chinese language, the radicals are generally placed to the left, as

 *haou*, 'good,' in which the radical is  *neu*, 'a

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woman,' except in those instances in which they inclose the phonetic or special groups. In the Egyptian hieroglyphs, every word not expressing an abstract idea, as the verb to be, or the grammatical forms, and pronouns, is accompanied by its determinative, and is incomplete without it. The genius of the writing is that the phonetics and ideographs mutually explain each other. Sometimes, indeed, by a kind of redundant pleonasm, the determinatives are placed after the special ideographs, as , the three rings, of metal after the cape used to express gold and silver; , the three flowers after the lily, to signify lily; and  , the skin after the goat, to mean goat. The phonetic portion of the hieroglyphs consists, at the best period of writing, of a limited number of signs, about 130, employed as a syllabarium; and though the term alphabet has been often used in speaking of the phonetic hieroglyphs, nothing of the nature of a pure alphabet existed till a later period, when the Phœnicians invented a purely alphabetic system, suppressing the vowels, which the Greeks still further improved by reintroducing them into their graphic system, and so brought to perfection the invaluable invention of alphabetic writing, at once concise, compendious, and complete. But the Egyptian hieroglyphs comprise two classes of syllables—those ending with vowels, or the so-called alphabetic, and those ending with consonants; or, in other words, of monosyllables and polysyllables. As the monosyllables enter into the composition of the polysyllabic groups, it is evident that they are older than the biliteral or dissyllabic hieroglyphs. The spoken language seems, in fact, to have originally consisted of monosyllables, which

 an eagle, Aa.


 an arm, Aa.


 a reed, Âu.

 a calf, Au.


 a heron, Ba.


 a leg, Bu.


 a cerastes, Fi.


 an eaglet, Ga.

 a vase, Ga.


 a viper, Gi.

 leg of a stool, Ha.

 a house, Ha.


 a papyrus plant, Ha.


 fore-part of lion, Hâ.


 twisted cord, Hi.


 a tusk, Hu.

 a club, Hu.

 two reeds, Iu.

 two oblique strokes, Iu.
































 a bowl, Kâ.

 leaf of water-lily, KHa.

 a mormorus fish, KHa.


 a mace, KHa.



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 a sieve, KHi.	 a stand, Qa.
 { a garment, KHu, or Au.	 top of quiver, Sa.
 a lion, Ru, or Lu.	 a goose, Sa.
 a mouth, Lu, or Ru.	 a woof, Sa.
 a pen, Ma.	 a reed, Su.
 a weight, Ma.	 a bolt, Su.
 a hole, Mâ.	 { back of chair, S(en or -et).
 an owl, Mu.	 a garden, SHa.
 a vulture, Mu.	 part of dress, SHa.
 a water-line, Na.	 a pool, SHi.
 a red crown, Na.	 a spindle, Ta.
 a vase, Nu.	 a hand, Ti.
 a goose flying, Pa.	 twisted cord, Ti.
 a shutter, Pu.	 a muller, Tu.
 a knee, Qa.	 a duckling, Ui.
	 a twisted cord, Ui.

were subsequently enriched by agglomeration, and combined into biliteral and triliteral roots. Several of these monosyllabic words have descended from the ancient language to the Coptic, as *ab*, a lamb; *an*, a cow; *mau*, a lion; *ra*, the sun; *pe*, the heaven. Numerous words of this class may still be traced as the roots of the more ancient language, but it is obvious that only a few of the most unmanageable could be selected for the combined purpose of sound and writing. In some instances, two or more seem to have been selected for the same sounds, in order to suit the style of writing, horizontal or vertical signs being required for the careful packing of the groups in the texts. Now, it will be necessary to bear in mind that each of these hieroglyphs of the first phonetic division represents a monosyllable, of which it represents the whole by itself considered as the initial, but that it was always capable of having the vowel hieroglyph which followed the initial placed after it, and that in the hieratic or cursive Egyptian writing, this was generally the case, in order to distinguish the signs. This final vowel is, however, generally omitted in hieroglyphic texts, and is said to be *inherent*, or that it ought to be pronounced in the first hieroglyph. The alphabetic syllabarium is as above,



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




This comprises all the signs which may be considered alphabetic in their nature, at the best period, or from the 4th to the 21st dynasty, when a revolution took place in the mode of writing, and about 90 additional signs, taken from the ideographs and syllabics, were added to the preceding alphabetic, and used indiscriminately—not, indeed, all at once, but by gradual introductions, from the 21st dynasty till the 2d c. after Christ. Nor are all the signs of the preceding alphabet of equal antiquity, or as much used as others. As to the inherent nature of the vowels, it may be observed that  A, the commonest, is often writ-





ten with its complement  u after it, as  Au, and that

 is indifferently expressed with , as   Ha.

Of the three forms of the A, the first expresses the aspirate, the second the nasal, the third the soft breathing. Besides, too, their final complement, the initial sound, especially of consonants, probably of those newly introduced into the system, was placed before them, to explain their use

Thus  was often written  Nu, preceded by N, and followed by u, and others in the like manner. The consideration of the signs that precede and follow, indeed determines the sonal value of certain hieroglyphics which are thus encased and explained by other phonetics.

The syllabics are constructed on the same plan. They consist of an initial hieroglyph, which is capable of expressing by itself the whole syllable, as  Am,  Her, but which take after them there inherent consonant or complement, as   AM,   HER, and are sometimes

preceded by their initial complement, as    

These are more numerous than the alphabetic-syllabic class, and are as commonly used in the texts. The language had impressed upon it by this mode of writing a certain ideographic character, which it retained, certain words being written only by certain syllabics, and the use of the two syllabaries was by no means promiscuous, the examples of different modes of grouping the same word being abnormal, and referable to long intervals of time. For though several hundred papyri exists in the museums of Europe, and no two are written precisely alike, yet the greatest differences will be observable in those which are similar texts, written at long intervals of time from each other. Nevertheless, some latitude prevails in the writing of certain words and proper names, and those hieroglyphs which appear in the corresponding places of others are called *variants* or *homophones*. Sometimes the same proper name is represented by six different groups of hieroglyphs, yet they could have been pronounced in only one way, as they represent the same name, and the different hieroglyphs are consequently only interchanged to express the same sounds,

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The *language* of the hieroglyphs is nearest to the Coptic, the form which it assumed about the 3d c. after Christ, when the Greek alphabet, reinforced by letters borrowed from the demotic or popular cursive hand of the period, superseded the demotic and hieroglyphic mode. The Coptic (q.v.), extinct only as spoken about a century and a half ago, differs considerably from the monumental texts, having been corrupted by the introduction of Greek, Latin, and Arabic words, but this contains, as its base, the old language of the country—a tongue analogous in some respects to the Semitic dialects, but in others of a construction which may be called Hamitic, or allied to the African. The great peculiarity of the hieroglyphic language is, that the verbal root both of the nouns, adjectives, and verbs remains unchanged, and that the dual and plural are made by postfixes, the cases of the nouns formed by prepositions, and the tenses of the verbs by the prefixing of the declined abstract auxiliary verbs, *Au*, *An*, or *Kheper*, to be; or by the affixing of the pronouns *a*, *k*, *t*, *f*, *s*, *nen*, *ten*, *sen*, preceded by prepositions, to the verbal roots. The pronouns are either detached and prefixed or affixed, and the prepositions are either simple or compound; many remarkable forms of the last class existing in the language. There is great vagueness in their employment, and their meaning is often abnormal, and defined only by the context.

Considered as the most ancient written language, the hieroglyphs throw great light upon comparative philology, the relative antiquity of various words and locutions, the general construction of language itself, and the development of picture-writing into the abstract ciphers of sound, called letters. A great portion of the words are similar to the Semitic, either directly or indirectly; thus *iuma*, the sea, is like the Hebrew *yam*; *kaf*, an ape, like *qof*. The majority are, of course, purely Coptic; but at the period of the 19th dynasty, about B.C. 1300, many Hebrew, Syriac, and Aramaic words were introduced into the language by the progress of the Egyptian arms to the East, and such words appear as *bata* for *Beth*, a house, *makaturu* for *Migdol*, a tower, and others; they are, however, rare and few compared to the body of the language. Many other words appear to be Indo-Germanic. It is now thought that Hitite characters give some indications of an Egyptian origin. For the literature, see PAPYRUS.

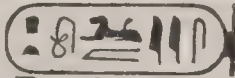
The invention of hieroglyphs, called *Neter kharu*, or 'divine words,' was attributed to the god Thoth, the Egyptian Logos, who is repeatedly called the scribe of the gods, and lord of the hieroglyphs. Pliny attributes their invention to Menon. The literature of the Egyptians was in fact styled Hermaic or Hermetic, on account of its supposed divine origin, and the knowledge of hieroglyphs was, to a certain extent, a mystery to the ignorant, although universally employed by the sacerdotal and instructed classes (see HERMES: HERMETIC BOOKS). To foreign nations, the hieroglyphs always remained a mystery; though Moses is supposed to have been versed in the knowledge of them (*Philo*, vita Moysis): but Joseph is described as

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conversing with his brethren through interpreters, and does not appear to allude to hieroglyphic writing. The Greeks, who had settled on the coast as early as B.C. 6th c., do not appear to have had more than a colloquial knowledge of the language; and though Solon, B.C. 538, is said to have studied Egyptian doctrines at Sebennytus and Heliopolis, and the doctrines of Pythagoras are thought to have been derived from Egypt, these sages could have acquired their knowledge only from interpretations of hieroglyphic writings. Hecataeus (B.C. 521) and Herodotus (B.C. 456), who visited Egypt in their travels, obtained from similar sources the information that they have afforded of the language or monuments of the country. Democritus of Abdera, indeed, about the same period (B.C. 459), had described both the Ethiopian hieroglyphs and the Babylonian cuneiform, but his work has disappeared. After the conquest of Egypt by Alexander, the Greek rulers began to give attention to the language and history of their subjects, and Eratosthenes, keeper of the museum at Alexandria, and Manetho, high-priest of Sebennytus, had drawn up accounts of the national chronology and history from hieroglyphic sources. Under the Roman empire, in the reign of Augustus, one Chæremon, keeper of the library at the Serapæum, had drawn up a dictionary of the hieroglyphs; and both Diodorus and Strabo mention them, and describe their nature. Tacitus, later under the empire, gives the account of the monuments of Thebes translated by the Egyptian priests to Germanicus; but after his time, the knowledge of them beyond Egypt itself was exceedingly limited, and does not reappear till the 3d and subsequent centuries after Christ, when they are mentioned by Ammianus Marcellinus, who cites the translation of one of the obelisks at Rome by one Hermapion, and by Julius Valerius, author of the apocryphal life of Alexander, who gives the translation of another. Heliodorus, a novelist, A.D. 400, describes a hieroglyphic letter written by Queen Candace (iv. 8). The first positive information on the subject is by Clement of Alexandria (A.D. 211), who mentions the symbolical and phonetic, or, as he calls it, cyriologic nature of hieroglyphics. Porphyry (304) divides them also into cœnologic or phonetic, and enigmatic or symbolic. Horapollo or Horus-Apollon, supposed to have lived about 500, wrote two books explanatory of the hieroglyphs, a rude, ill-assorted confusion of truth and fiction, in which are given the interpretation of many hieroglyphs, and their esoteric meaning. After this writer, all knowledge of them disappeared till the revival of letters. At the beginning of the 16th c. (1529), these symbols first regained attention, and soon afterward Kircher, learned Jesuit, pretended to interpret them by vague esoteric notions derived from his own fancy, on the supposition that the hieroglyphs were ideographic, a theory which barred all progress, but was held in its full extant by the learned, till Zoega, at the close of the 18th c. (1787), first enunciated that the ovals or cartouches contained royal names, and that the hieroglyphs, or some of them, were used to ex-

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press sounds. More monuments were known, and juster ideas had begun to dawn on the European mind; and the discovery by the French, 1799, of the so-called Rosetta Stone, a slab of black granite, having inscribed upon it, first in hieroglyphics, secondly in demotic or enchorial (a cursive popular form of writing extant at the period), thirdly in Greek, a decree of the priests of Egypt assembled in synod at Memphis, in honor of Ptolemy V., gave the first clue to the decipherment. The first attempts, indeed, were made on the demotic text by Silvestre de Sacy with some success; but it was soon discovered that the demotic was not purely alphabetic. Crude notions of the ideographic nature of the hieroglyphs prevailed till Dr. Young, 1818, first gave out the hypothesis, that the hieroglyphs were used as sounds in royal proper names. He was led to this conclusion by tracing hieroglyphs through the cursive hieratic to the more cursive demotic; and as this last was known to be alphabetic, he deduced that the corresponding hieroglyphic signs were so. In this manner, he came to the conclusion that the first hieroglyph in the

name of Ptolemy  in the Rosetta Stone (a mat) represented a P; the second (hemisphere) a T; the third (a loop) he supposed to be superfluous; the fourth (a lion) he read OLE; the fifth and sixth, the syllable MI; and seventh, the back of the seat, and S. Unaided by bilingual monuments, he assayed to decipher the name of Berenice, and altogether established the value of five hieroglyphs as letters out of two names, but was unable to proceed further. Champollion, 1822, by means of an inscription found on an obelisk at Philæ, which had at the base a Greek inscription, recognized the name of Cleopatra, and by comparison with that of Ptolemy, at once proved the purely alphabetic, not syllabico-alphabetic nature of the signs. Extending the principle, he read by its means the names of the Greek and Roman, and finally those of the native monarchs. It was soon seen that the same hieroglyphs as those used in these names were extensively used in the texts for words, and these words turned out, in most instances, analogous to the Coptic. Although the discoveries of Champollion were received by many of the learned in Europe with distrust, yet his method of research was slowly adopted by Rosellini and Salvonini 1832, and subsequently extended methodically by Lepsius 1837, and by Bunsen, Hincks, De Rougé, Birch, Goodwin, Chabas, Brugsch, and others.

The method of interpretation adopted has been strictly inductive, the value of the characters being deduced from the equation of sounds, or homophones of similar groups. The meaning of the groups or words has been determined by examining all known instances in which they occur in passages capable of being interpreted, that of the ideographs by observing the form of the symbols; many of them have been made out from the pictures which they explain, or the phonetic groups which accompany them. A careful comparison has been instituted with correspond-

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ing Coptic and Hebrew roots when they exist. In short, a careful principle of induction has been applied to the study of the hieroglyphs.

The discovery of another trilingual inscription, that of the tablet at San or Tunis, recording a synodical act of the priests in the reign of Ptolemy Euergetes II., B.C. 238, has confirmed the results obtained by Egyptologists, the meaning of almost all the words having been previously determined; while the power of reading all documents and inscriptions afforded by their researches has brought resuscitation of a knowledge of the history, science, and literature of the ancient Egyptians. The study has long passed into the category of a recognized branch of oriental learning, and the researches have assumed a more critical form. This has been owing to the number of students, and the abundance of material extant and published. The doubts with which the interpretations were at first received have succumbed to the conviction that nothing but a current system of interpretation could have obtained such logical results. Whatever doubt may exist as to minor details and more delicate shades of language, all the grammatical forms and three-fourths of the words of the old Egyptian language have been established.

The hieroglyphs stood in the same relation to the other two forms of writing the character, called hieratic and demotic, as type does to handwriting. Their use was chiefly for official inscriptions on public or private monuments, religious formulæ and prayers, and rituals or hermetic books (see PAPYRUS). The most remarkable hieroglyphic inscriptions are—that of Una, recording the conquest of the lands of the negroes at the time of the 6th dynasty; in honor of Khnumhetp at Benihassan, recording the investment of his family; the campaigns of Ahmes against the Hykshos at El-Kab; the annals of Thothmes III. at Karnak, the campaign of Rameses II. against the Khita, and the treaty with them; the account of the tank for gold-washings in the reign of Seti I. and Rameses II. at Kouban and Redesich; the invasion of Egypt in the reign of Meneptah by the allied forces of the Libyans, Maxyes, Achaioi or Greeks, Sicilians, Etruscans, Lycians, and other people of the basin of the Mediterranean; the star-risings on the tomb of Rameses V.; the journey of the ark of Khons to Bakhtan, in the reign of Rameses X.; the account of Cambyzes and Darius on the statue of the Vatican; the above cited synodical act of the priests in honor of Ptolemy Euergetes II., and that (on the Rosetta stone) of the priests assembled at Memphis in the reign of Ptolemy V.; the sepulchral tablets of the family of Pasherentah; and the long series of sepulchral tablets of the bull Apis found in the Serapeion, recording the birth, installation, and death of the bulls from the 18th dynasty to the Persians.





In connection with the H. are two modes of writing them, first the *hieratic*, a kind of abridged hieroglyphs. The number of these written characters is fewer than that of the hieroglyphs, the generic determinatives being more employed, and the vocalic complements of the consonants

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being constantly written, in order to distinguish similar forms. This writing was more extensively used than the hieroglyphic, being employed for state papers, legal documents, memoranda, accounts, religious books, rituals, and all the purposes of private and public life. Books were generally written in hieratic. It commences as early as the 4th or 5th dynasty, and terminates only about the 3d or 4th c. after Christ. At the earliest period, it is occasionally written perpendicularly, but it was afterward written only horizontally, and has generally portions in red ink, corresponding to our initial illuminated letters or rubrics. For the literary contents of these rolls, see Papyrus. Some, indeed, have supposed that the hieratic alphabet gave rise to the Phœnician, and have endeavored to trace the Phœnician alphabet from hieratic sources. But though much ingenuity has been expended in this inquiry, the precise source of Phœnician writing remains involved in obscurity, the principal fact being, that a syllabary existed long prior to the Phœnician alphabet, which did not reach the perfection of the Greeks, owing to the suppression of vowels. The second kind of hieroglyphic handwriting was the *demotic*, or so-called enchorial. It was a still further reduction of the hieratic, simpler forms being used, while the complements are not used, and it approaches still nearer the alphabetic system. It contains an alphabet of 42 letters, and a syllabary of 48 characters, and is less rich in the number of determinatives and ideographs than the hieratic. It is, like all cursive hands, more difficult to decipher than hieratic. It was introduced into the Egyptian graphic system about the commencement of the 26th dynasty, B.C. 6th c., and continued in use till the 3d c. after Christ. This was the last native form of writing in Egypt, the early Christians having introduced the Greek alphabet, with a few characters borrowed from the demotic. This script was rarely used for public monuments, though it appears on the Rosetta stone; but it was universally employed for contracts, public documents, and occasionally for religious formulæ, owing to the decreasing knowledge of hieroglyphics. At the time of Clement, it was the first learned by beginners. With it the Greek language began to appear in public use.

Besides the Egyptian H., there are those of the Aztecs or Mexican, a kind of pure picture-writing, the names of monarchs, towns, and other things being painted by the objects which corresponded to their names. While in their historical writings the events themselves were portrayed, the number of the years of the reign of the king was indicated by placing in a line *en potence* in the picture the symbols of the years of the Aztec cycle, which were named after plants and animals. The Mexican hieroglyphs, in fact, consisted of conventional pictures, and they had no means of expressing grammatical form or any structural parts of a language. This mode of pure picture-writing prevailed not only in Mexico, but among the nations of Central America. The knowledge of these symbols has unfortunately been almost lost since the Spanish conquest, the

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meaning of only a few having been rescued from oblivion in the 16th c., when the greater part of the Aztec mss. was destroyed by the Spanish ecclesiastics. It has indeed been asserted, that the monks used these symbols according to their *sounds*, to write the Lord's Prayer and other formulas; thus: , a flag, pronounced *Pantti*, was used for the syllable *Pa*; , a stone, *Tell* for *tě*, the two expressing *Pater*; a , a cactus fruit, *Nochtli*, for *Noch*; and a stone , as above for *te*: these four groups expressing *Pate(r) Nochte*, or *Noster*; and so forth. This seems to show the development of a phonetic system, but it was never extensively used, on account of abhorrence of the Aztec idolatry.—The term hieroglyphic was used also by the writers of emblemata or devices, symbolizing Gnostic sentences taken from the Greek and Latin poets, and having no relation to Egyptian hieroglyphs.—In recent times, too, the astrological almanacs have had their symbolical representations and supposed prognostics of future events, which they called hieroglyphs.—Zoega, *De Origine Obeliscorum* (fo. Romæ 1797); Young, *Archæologia* (1817, XVII. 60); *Encyclop. Britannica* (8th ed.); Champollion, *Précis du Système Hieroglyphique* (1824); *Grammaire Egyptienne* (1841–61); *Dictionnaire* (1841); Lepsius, in the *Ann del' Instituto Arch.* (1828); Birch, *Introduction to the Study of the Hieroglyphics* (1857), Brugsch, *Grammaire Démotique* (Berl. 1855), *Wörterbuch* (1867–8), *Grammatik* (1872); De Rougé, *Etude d'une Stèle Egyptienne* (1858); Chabas, *Papyrus Magique d'Harris* (1861); *Zeitschrift. f. ägypt. Sprache* (1863–74); Bunsen, *Egypt's Place* (V. 1867).

HIERONYMITES, *hī-ēr-ōn'ī-mīts*, or **HIERONYMIANI**, *hī-ēr-o-nīm'ī-an-ī*: one of the many hermit orders (q.v.) established in the 13th and 14th c. The H. grew out of the third order of St. Francis: see **FRANCISCANS**. Some of the followers of Thomas of Siena, one of the Franciscan rigorists, having established themselves in various places among the wild districts which skirt the Sierra Morena, by degrees formed into a community, and obtained 1374 the approval of Pope Gregory XI., who confirmed their rule, which was founded on that of St. Augustine. The institute extended into other provinces of Spain, and also into Portugal; it was subsequently established in Italy, Tyrol, and Bavaria, where they subsisted till 1688.

HIERONYMUS: Christian father: see **JEROME**.

HIEROPHANT, *hī-ēr'o-fant*, or **MYS'TAGOGUE**: priest who presided over the mysteries at Eleusis; always selected from the family of Eumolpus, who was regarded as founder of the order and the first Hierophant. The H. was required to be a man of ripe years, without any physical defect, having a fine voice, and of spotless character. He was forbidden to marry, but it is probable that married men were likewise appointed H., and were merely prohibited from forming a second marriage. In the mysteries, the H. represented the Demiurge or creator of the universe. He alone was authorized to preserve and explain the unwritten

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laws, to introduce candidates into the temple of Eleusis, and gradually initiate them into the less and greater mysteries. On this account, he was likewise styled *Mystagogue* and *prophet*, and no one was allowed to utter his name in the presence of an uninitiated person. At public solemnities he carried the image of the goddess splendidly attired.

HIESTER, hē'stēr, JOSEPH: 1752, Nov. 18–1832, June 10: b. Bern, Penn.: soldier and statesman. He was bred to farm labor, received a dist. school education, became a clerk in Reading, Penn.; raised and equipped a co. of vols. for the revolutionary army, was in the battles of Long Island and Germantown, promoted col., was a prisoner in the prison-ship *Jersey*, served in the constitutional conventions 1776, 90, the Penn. house 5 years, and senate 4 years, congress 1797–1805, 1815–20; gov. of Penn. 1821–23; and was commissioned maj.gen. of state militia 1807.

HIGGINSON, hīg'in-son, FRANCIS: 1588–1630, Aug. 6; b. England: clergyman. He graduated at Cambridge Univ., was ordained pastor at Claybrooke, a Leicester parish, 1615, became a Puritan and was deprived of his parish, spent several years preparing candidates for the univ., accompanied the expedition of the Mass. Bay Co. to New England 1628, became 'teacher' of the congregation at Salem, Mass., 1629, July 20. and drew up their first confession of faith.—His son, JOHN H., 1616, Aug. 6—1708, Dec. 9; b. Claybrooke, England, came to America with his father, was short-hand reporter of the synod 1637, chaplain at the Saybrook (Conn.) fort, ordained pastor of the church at Salem, Mass., which his father had founded, and preached there from 1660 till death.

HIGGINSON, THOMAS WENTWORTH: author: b. Cambridge, Mass., 1823, Dec. 22. He graduated at Harvard College 1841 and the Cambridge Divinity School 1847. was ordained pastor of the First Religious Soc. (Unit.), Newburyport, Mass., 1847, defeated as free-soil candidate for congress 1850, pastor of the Free Church, Worcester, Mass., 1852–58, brig-gen. on Gen. James H. Lane's staff in the Kan. free state movement 1856, retired from the ministry to apply himself to literature 1858, was appointed capt. 51st Mass. vols. 1862, Sep., promoted col. 1st S. C. vols. (subsequently 33 U. S. colored troops) 1862, Nov.; captured Jacksonville, Fla.; was wounded at Wiltown Bluff, S. C., 1863, Aug.; and resigned from the army from disability 1864, Oct. He was a member of the Mass. legislature and chief of the governor's staff 1880–1, and member of the Mass. board of education 1881–83, and has long been an earnest advocate of woman suffrage, the higher education of women, and the advanced education of the young of both sexes. He was appointed military and naval historian of Mass. for the civil war period 1889. June. He is a polished and vigorous writer; has contributed numerous essays to *The Atlantic Monthly*; compiled with Samuel Longfellow *Thalatta*, a vol. of seaside poetry (1853); translated the *Complete Works of Epictetus* (1865); edited *Harvard*

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Memorial Biographies, 2 vols (1866), and *Brief Biographies of European Statesmen*, 4 vols. (1875-77); and published *Outdoor Papers* (1863), *Malbone, an Oldport Romance* (1869), *Army Life in a Black Regiment* (1870), *Atlantic Essays* (1871), *The Sympathy of Religions* (1871), *Oldport Days* (1873), *Young Folks' History of the United States* (1875), *History of Education in Rhode Island* (1876), *Young Folks' Book of American Explorers* (1877), *Short Studies of American Authors* (1879), *Common-Sense about Women* (1881), *Life of Margaret Fuller Ossoli* (1884), *Larger History of the United States* (1885), *The Monarch of Dreams* (1886), and *Hints on Writing and Speech-making* (1887).

HIGGLE, v. *hīg'l* [prov. Ger. *hitzler*, one who carries about meal or corn on horseback for sale: Swiss, *hodeln*, to traffic in corn]: *literally*, to carry about provisions for sale; to be difficult in making a bargain; to chaffer. HIGGLING, imp. *hīg'ling*: N. the being tedious and nice in making a bargain. HIGGLED, pp. *hīg'ld*. HIGGLER, n. *hīg'ler*, one who chaffers; one tedious in making a bargain: see HAGGLE 2.

HIGGLEDY-PIGGLEDY, ad. *hīg'l-dī-pīg'l-dī* [imitative of confusion]: in *familiar language*, confusedly; topsy-turvy; chance-medley.

HIGH, a. *hī* [AS. *heah*; Goth. *hauhs*; Icel. *ha*; Ger. *hoch*; Dan. *høi*, high—*lit.*, raised or bunched up]: far upward; elevated; lofty; noble; honorable; solemn; violent; boastful; principal or chief; strong or powerful; dear in price; full or complete—applied to time; acute, as applied to music: AD. aloft; greatly; with deep thought. HIGH'LY, ad. *-lī*, in a great degree with esteem; in *OE.*, proudly; arrogantly. HIGH'NESS, n. *-nēs*, elevation; title given to princes or persons of rank: the titles 'Your Highness' and 'Your Grace' both were used in England in former times in addressing the sovereign, but were supplanted by 'Your Majesty' toward the end of the reign of Henry VIII. The children of royal personages are addressed 'Your Royal Highness;' those of emperors, 'Your Imperial Highness.' The sultan of Turkey is addressed as 'Your Highness.' ON HIGH, aloft. HIGH ADMIRAL, the chief admiral. HIGH ALTAR, the principal altar (see ALTAR). HIGH AND DRY, completely out of the water; out of reach of the waves. HIGH ART, that elevated style which disarms criticism by avoiding the slightest attempt at meretricious display. HIGH BAILIFF, chief officer of some corporate towns in England—the name being distinguished from Bailiff, which conveys no honor and is applied to the lowest class of officers who execute writs against debtors. HIGH-BLOWN, much inflated. HIGH-BORN, of noble birth. HIGH CHURCH, the party in the Church of England or other ecclesiastical bodies, who hold strong views of the authority and jurisdiction of the church. HIGH-COLORED, glaring; exaggerated. HIGH COMMISSION COURT, in *hist.*, tyrannical court established by Queen Elizabeth to reform the church, which much abused its powers, now abolished. HIGH CONSTABLE: see CONSTABLE.—HIGH COURT OF JUSTICE;

HIGHER CHRISTIAN LIFE.

see CHANCERY: COMMON LAW, COURTS OF: EQUITY, COURTS OF. HIGH DAY, a great feast-day; a day of great ceremonies. HIGH-FED, pampered. HIGH-FLIER, one who carries his opinions or claims to extravagance. HIGH-FLYING, extravagant in opinions or claims. HIGH-FLAVORED, having a strong flavor. HIGH-FLOWN, swelled; proud; extravagant. HIGH-HANDED, violent; overbearing. ON HIS HIGH HORSE, in a state of high excitement and glee; displaying arrogant, boastful, and offensive conduct. HIGH LATITUDES: see under LATITUDE. HIGH LIFE, the manner of life among the aristocracy, or persons of wealth. HIGH LIVING, the feeding upon rich and costly food. HIGH-LOWS, *-lōz*, a boot extending up to the ankle only. HIGH MASS, mass on great occasions, and in a specially formal and solemn manner. HIGH-METTLED, having a proud or ardent spirit. HIGH-MINDED, foolishly proud; arrogant; often applied in the sense of having honorable pride. HIGH MISDEMEANOR, an offense or crime closely bordering on treason. HIGHMOST, in *OE.*, highest; topmost. HIGH PLACE, an elevation or mound used in anc. times for worship and sacrifices (see HIGH PLACES). HIGH-PRESSURE ENGINE, a steam-engine in which the steam is not condensed. HIGH-ROAD, that used by the public for traffic, vehicles, etc.—so named as having been raised above the usual level of the country in many parts of it. HIGH SEA, the ocean beyond the limits of the waters usually assigned to nations—that is, beyond the limits of three miles (see HIGH SEAS). HIGH-SEASONED, food well spiced. HIGH-SOUNDING, pompous; noisy. HIGH-SPIRITED, full of life and spirit. HIGH STEWARD, in *England*, a legal peer specially appointed by the crown to act as speaker or chairman of the peers who sit at the trial of another peer indicted for treason or felony; he votes with the rest: to be tried by the court of the High Steward is one of the privileges of the British peerage. HIGH TIME, time at which a thing must be attended to; quite time. HIGH-TONED, high in sound or in moral principles. HIGH TREASON, the greatest offense that can be committed against a government, and assigned by statute to various crimes—as, compassing the death of the sovereign, rebellion against the state, killing certain high officers, counterfeiting the great seal, etc. (see TREASON). HIGH-WATER, the time when the tide has flowed to its furthest point. HIGH-WATER MARK, line reached by the furthest flow of the tide. HIGH-WROUGHT, *-rawt*, accurately and elaborately finished; denoting a highly excited mental state; in *OE.*, tumultuous; seething.—SYN. of 'high': raised; exalted; difficult; extreme; abstruse; ostentatious; arrogant; proud; tall; severe; oppressive; illustrious; powerful; tempestuous; loud; tumultuous; turbulent; ungovernable; full; complete; dear; exorbitant; capital; great; supercilious; ostentatious.

HIGHER CHRISTIAN LIFE, THE: name used to describe a superior state of Christian grace which, many persons say, can be and has been reached in this life through the work of the Spirit of God in the heart. They call it also, Full Salvation, Entire Holiness, and Christian

HIGHER CRITICISM.

Perfection. So far as genuine Christian experience actually attained in this life is concerned the difference between this view and the opinion generally held by Christians that sanctification is a progressive work to be diligently prosecuted but not perfectly finished in this life, seems to arise chiefly from confusion of thought. For while its advocates speak of 'Entire Holiness as a complete cleansing from moral defilement or sin,' they say also that 'it is to be distinguished from that Christian maturity which is not to be attained this side of heaven.' While they affirm that it can be gained in this life they confess also that it may be lost. They even who retain their entire holiness are liable, it is admitted, to 'involuntary transgressions which are infirmities needing atonement, but are not sins.' Above all, the advocates of this view insist that the standard of duty set up by the gospel has been lowered in compassion for the diminished powers of fallen man. Reaching the full height of this lowered standard seems to be called by them Christian perfection; whereas the acceptance and the reaching of only an inferior standard has usually been deemed imperfection, or a lower life.

HIGHER CRITICISM, THE: critical investigation of the materials, style, and minor details of the books of the Bible, with a view to deciding their authorship, date, etc. The attention given in modern times to ancient writings (after centuries of neglect and consequent ignorance) quickly led to many critical inquiries concerning the genuineness, date, and interpretation of the various books of the Bible. As external evidence was often wanting critics were led to examine the contents, diction, and style of the books themselves. Such examinations, being gradually extended in their scope, variety, and depth, at length were called by Eichhorn, about a century ago, the Higher Criticism—the name by which they are now best known.

Eichhorn and many others after him have laboriously applied these critical tests to the Scriptures, and especially to the Old Testament. As an illustration of their work, reference may be made to the extreme theories which some of them advance concerning the Pentateuch, as to its authorship, structure, and date. I. This portion of the Scriptures which ordinary readers accept as, in the main, one continuous production, is adjudged by the keen scrutiny of the higher critics to be made up of several documents, by different authors, which were at some subsequent time, woven together by some who, for want of a more definite name, is called a redactor. This combined narrative was, after a time, as the critics determine, again modified and enlarged by other redactors; and so, through successive stages, the Pentateuch reached its present size and character. In the progress of the redactions not only were large sections combined together; but often also single sentences and parts of a sentence, taken from different documents, were formed into a continuous narrative with a skill in joining the fragments together which must at times have equalled even the acumen of the critics in determining where the joinings were made. II. These documents and redactors

HIGH-FALUTIN--HIGHLANDS.

have been discovered solely by critical skill. There are no historical records to prove their existence and no traditional memories to imply it. The higher criticism alone has brought them to light. III. As the critics draw their conclusions from their own judgments concerning qualities of style, the development of laws, and the order in which one enactment followed another, several conflicting divisions of the Pentateuch have been discovered; each critic being confident concerning his own achievement, and one often setting aside the equally certain discovery of another. The Higher Criticism, even in this extreme aspect of it, greatly promotes genuine Biblical knowledge, not only by bringing to light some unnoticed facts, but especially through the counter investigations which it impels.

HIGH-FALUTIN, a. *hî-fâl-ô'tîn* [a slang phrase]: applied to a grandiose and bombastic style of speech or writing; much sound and little sense; fustian.

HIGHGATE, *hî'gât*: northern suburb of London, in the county of Middlesex; a station on the Highgate and Edgware railway, 5 m. n.n.w. of St. Paul's. It comprises many elegant villas, and some important benevolent institutions. On the slope of a hill below the church of H. is the North London Cemetery. New buildings for the Highgate Grammar-school were erected 1867.

HIGH-JINKS, or **HY-JINKS**, n. *hî-jîngks* [see **JINK**]: formerly in *Scot.*, boisterous and hilarious merriment, in which the dice was thrown to determine the person on whom some ludicrous penalty should be imposed, or who should be called upon to empty his cup of liquor; hilarious and larking merriment.

HIGH-JOINT COMMIS'SION: see **GENEVA ARBITRATION**.

HIGHLAND, n. *hî'lând* [*high*, and *land*]: a mountainous region. **HIGH'LANDS**, a district in Scotland so called. **HIGH'LANDER**, n. one who is a native of the Highlands of Scotland, or of any mountainous district of a country.

HIGH'LAND REG'IMENTS: regiments in the British army, in which nearly all the officers, and a large proportion (about 80 per cent.) of the men are Scotch. They wear the Highland dress. For the origin of the first of these regiments, the 42d, abt. 1730, see **BLACK WATCH**. Seven other Highland regiments were raised, 1777-1805. Since 1881 these troops have been arranged in battalions, of which the total force may be considered to equal about 11 regiments.

HIGHLANDS, *hî'landz*: the higher parts of a country. e.g., Highlands of the Hudson, in N. Y. The term is applied specially to a particular district in Scotland, which has no political or civil boundary. Separated by only a vague line of demarkation from the division called the Lowlands, the Scottish H. comprise that portion of the n. and n.w. of Scotland in which the Celtic language and manners have to some extent lingered until modern times. The Highland line, as it is usually called, extends diago-

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nally across the country from Nairn on the Moray Firth to Dumbarton on the Clyde; but the mountainous part of the counties of Banff, Moray, Aberdeen, Kincardine, and Perth also are understood to be included in the designation Highlands. Caithness might be excluded as being generally level; but throughout the H. there are rich level tracts, none being more so than the e. division of Ross-shire. The Hebrides (q.v.) or Western Isles are included in the H., but the isles of Orkney and Shetland, though to the north, are distinctly excluded, by reason of the Norwegian origin of the inhabitants.

The H. are full of lofty hills, some green and pastoral with tracts of heath, others rugged and bare, varying in height from 1,000 to 4,000 ft., and having generally narrow valleys between, or else lakes and arms of the sea, called *lochs*. Besides the grander features, there are impetuous mountain torrents, picturesque ravines, and valleys or glens, in which, and on the sides of the hills, are seen the huts of the aborigines. Perhaps the most remarkable feature in the country is the line of valleys from Inverness to Fort-William, in which lies a series of navigable lochs, united by artificial channels to form the Caledonian Canal.—Growing up under a system of clanship, the state of society in the H. was antiquated and unsatisfactory, in a national point of view; while the country was almost impenetrable to travellers, or to any species of traffic. The first great attempt to reform this state of affairs was the opening up of the country by roads in different directions, under the superintendence of General Wade, about 1725–6. The next great act of melioration was the abolition of Heritable Jurisdictions (q.v.), including the ancient privileges of the heads of clans, about 1748. Then there was the planting of schools and churches. And lastly much was done by the establishment of the Highland and Agricultural Soc. 1784. The ancient patriarchal system has given place to improvements as regards communications, agriculture, dwellings, education, and other modern conditions, including a gradual substitution of English for the Gaelic language. Latterly, there has been a keen spirit of progress in the Highlands. Great numbers of the Celtic inhabitants, who had little chance of improving their circumstances on the spot, have been dispossessed, and their place taken by stock-farmers with capital from the Lowlands: see SUTHERLAND. While a new character has thus been given to extensive Highland pasturages, the value of estates has been further remarkably advanced by their being let for the pursuit of game to sportsmen, chiefly persons of rank and opulence from England. Inverness (q.v.) is usually spoken of as the capital of the H. See the Highland counties individually, See Dr. James Browne's *History of the Highlands and the Highland Clans* (4 vols. 1838, new ed. 1848); Keltie's *History of the Scottish Highland Clans and Regiments* (2 vols. 1875); Anderson's *Guide to the Highlands and Islands of Scotland*.

HIGH PLACES [Heb. *Bamoth*]: name in Scripture for certain places where illicit worship, usually idolatry, was

HIGH-PRIEST.

performed by the people of Israel. The practice of erecting altars on elevated situations was common in ancient times, and originated in the belief that hill-tops were nearer heaven, and, therefore, the most favorable places for prayer and incense. The fathers of the Jewish nation acted in this respect like their neighbors. Abraham, we are told, built an altar to the Lord on a mountain near Bethel. Moses, however, true to his grand aim of securing national strength and purity by a vigorous system of isolation, gave a law prohibiting the practice for the future, on the ground that the spots which the Israelites would be compelled to choose had been already polluted by idolatrous services. In spite of the vehemence with which the H. P. are again and again denounced in the Pentateuch, the prohibition seems to have been slow in producing the desired effect—if, indeed, it ever completely accomplished it. During the whole eventful period of the Judges, the prohibition was not only practically obsolete, but there were cases doubtless counted as exceptional—e.g. those of Gideon and Manoah, who built altars on high places by Divine command (Judges, vi. 25, 26; xiii. 16–23). Similarly the injunction was set aside by Samuel at Mizpeh and Bethlehem, by Saul at Gilgal, by David, by Elijah on Mount Carmel. The explanations given by the rabbis of these contradictions between the conduct of the prophets and kings of the Hebrew people, and the commands of their great lawgiver, are absurd. The fact probably was that even in the rigid Mosaic law, a higher law of *necessity* was recognized in matters merely external and involving no inherent wickedness; though this could have applied only to individual cases or to special periods. During certain periods, however, the law seems to have been quite disregarded. Whatever may be the true explanation, it is quite certain that worship in H. P. was almost universal in Judea, both during and after the time of Solomon. The results of this illegal practice were such as might have been anticipated: the people erected altars not only to Jehovah but also to Baal, and from worshipping in idolatrous places, proceeded to worship idols themselves. At a later period (see Books of Kings and Chronicles) a series of vigorous efforts was made by the more pious monarchs to suppress the practice, and after the time of Josiah, it seems to have been finally abandoned.

HIGH'-PRIEST [Hebr. *Kohen haggadol*, or emphat. *Kohen*, Gr. *archiereus*, Lat. *primus pontifex*, etc.]: the chief of the Jewish priesthood. His dignity was hereditary in the line of Eleazar, son of Aaron; and many more restrictions were attached to it than to the ordinary office of a priest. He was allowed to marry only an intact virgin, and one of his own tribe; every ceremonially impure contact even of the dead bodies of his own parents he was strictly forbidden, besides having to abstain from many other things that might cause any defilement whatever. His functions consisted principally in the general administration of the sanctuary and all that belonged to the sacred service. He alone was allowed to enter the Holy of Holies

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on the day of atonement, and to consult the Urim and Thummim (q.v.). His costume was of surpassing costliness and splendor, comprising numerous vestments in addition to those of the ordinary priests. This brilliant costume, however, was laid aside by the High-Priest when, on the annual day of atonement, he went to perform the most awful service in the Holy of Holies: a simple garb of spotless white linen—the funeral dress of the Jews in later times—was all that was allowed on that occasion. The revenues of the High-Priest were in the main the same as those of the other priests; but, according to the Talmud, he was to be richer than these, and if his own means were insufficient, he was to be provided with opulent means by his brethren, in virtue of his exalted position; the other priests never addressed the High-Priest but by *Ishi Kohen Gadol* ‘My Lord High-Priest.’ Before the law, however, the High-Priest was equal to any other Israelite. It is doubtful at what time the office of *Sagan*, or vice-High-Priest, was created. The Talmud, moreover, speaks of a ‘*Mashiach Milhamah*,’ ‘Anointed for the war;’ an officer who seems to have shared almost the dignity of the High-Priest, and whose special duty it appears to have been to read the proclamation prescribed in Deut. xx. 3, in time of war, and who may have accompanied the troops for celebration of the service in the camp. For further historical and theological points connected with this subject, see PRIESTS: AARON: JEWS.

HIGH SEAS: the open sea, including the whole extent of ocean so far as it is not the exclusive property of any particular country. The rule of international law is, that every country bordering on the sea has the exclusive sovereignty over such sea to the extent of three miles from its shore; but all beyond, and which is not within three miles of some other country, is open or common to all countries. The part of sea within three miles’ distance is generally called the territorial sea of the particular country, or *mare clausum*. The distinction has little effect on the right of navigation, but as regards fishing it is otherwise. Fishermen have no right to fish within three miles of the coast of another country than their own without a license from the authorities of that country, except as such right is granted by special treaty.

HIGHT, v. *hīt* [AS. *héht*, named—from *hátan*, to name, to be called: Icel. *heitinn*, named: Goth. *haitan*, to name]: in *OE.*, was or is called; called; intrusted; aimed.

HIGHWAY.

HIGH'WAY, in English Law: the place over which a right is enjoyed by the public, of walking, driving, or riding. In England, it is often called the queen's highway; not because the sovereign has any greater or better right than any of the public, but to denote the impartiality and equality with which all the subjects enjoy the right of way without distinction. In the United States, a H. sometimes means a country road as distinguished from town roads, though this distinction is not generally used.

Highways are distinguished into several kinds. 1. A footway, where the public have no right except to walk on foot; 2. A foot and horse-way, where the public have the right of walking or riding on horseback; 3. A pack, and drift-way—a way used for driving cattle and pack-horses; 4. A foot, horse, and cart-way, where the public can walk or ride, or use vehicles of all ordinary descriptions. Navigable rivers are also called highways, but this is in rather a figurative sense. Where the right of way belongs not to the public generally, but to the owner of one or two houses and their tenants, this is called a private-way, and is classed among easements.

It has often been disputed, and cannot be said to be yet thoroughly settled, whether a H. must be a thoroughfare—in other words, whether a road which does not lead to any public place can be a highway. The preponderance of authority seems rather in favor of the proposition, that it is essential that the H. be a thoroughfare. The mode in which a road is created is by dedication, or by grant of the owner, or by the necessity of things or act of the legislature, or of the municipal district concerned. Thus, in England, if a person allow the public for four or five years to pass through his fields without stopping them, this will be evidence from which a jury may infer that the owner meant to make a present to the public of the right of way, and he cannot afterward exclude the public, for the maxim holds, 'once a highway, always a highway.' The mode in which a grant of the way is proved, is generally by showing that the public have, from time immemorial, or for a few years without interruption, and with the owner's consent, enjoyed the right of way; for if that is proved, then the law presumes that the right was given by some lost grant. In the United States it has been held in one case that any road which has been used as such by the public for 50 years is a highway. There are also rights of way limited to a particular purpose, which may be proved by immemorial custom, as a way for the inhabitants of a village to or from some place of recognized public resort. One of the incidents of a H. is, that if it is foundrous, or out of repair, the passenger is entitled to go over the adjacent land, whoever may be the owner of it, so as to avoid the foundrous part of the road. Another incident of the use of a H. is, that if any obstruction is placed on it, whether in the nature of a gate, or a wall, or even if a house be built too near so as to enroach on the H., any passenger has a right to abate the nuisance—i.e., he may himself, without any ceremony, remove the

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obstruction, or demolish the wall, but he must take care not to do more damage than is necessary for the purpose of clearing the road, otherwise he will subject himself to an action. Another incident is, that the public have an absolute right to use every part of it, and to pass to and fro in all directions. Of course, each must comply with certain well-known rules, such as that of giving and taking the road, otherwise, if an accident were to occur, he would be liable for the negligence, if it arose from a neglect of such rules, for these constitute, as it were, the law of the road. It results from this principle, that no person, or body of persons, is entitled to convert part of the H. into any purpose, however useful, other than a highway. In England this principle has been applied so far that when some vestries and surveyors presumed to give leave to a contractor to lay down a 'tramway' or track for horse-cars in the streets (e.g. in London), which was alleged to be a great public improvement, nevertheless, as it practically resulted in giving a monopoly to some persons, and moreover was an obstruction to others, this was held to be a nuisance, and the parties who took part in it were indicted for the obstruction. And on the same principle, it has been held an indictable nuisance for an electric telegraph company to place their telegraph posts on the strips of land at the side of the road; for though it might be thought for the benefit of the public, instead of the reverse, yet as it practically obstructed the public in the free passage from every part of the highway to every other, it was held to be a nuisance. Nothing but an act of parliament can legalize such uses of a H. in England. In the United States, such matters are largely in the control of counties, or of municipal corporations. Such corporations formerly had the right to lay out and open streets with or without consent of property-owners along the line: now it is common to make requisite the consent of a majority of the property-owners—at least this may be said to be the usual requirement in regard to the laying of any kind of track or rails for cars.—The law of the road as to team or persons meeting is, in England, that they shall turn to the left: in the United States, that they shall turn to the right.

The soil of the H., or rather the right to the ground beneath the H., is presumed to be in the adjoining owners. Thus, if the land on both sides belong to the same owner, then the right to the ground beneath the road belongs to him also; and if the land on one side belongs to a different owner from the land on the other side, then each is presumed to have the right to the ground under the H. to the middle line. This rule is more than a mere theory, for though neither of the adjoining owners can ever interfere with the passage of the public, who have an absolute right for ever to use it for every lawful purpose of transit, yet the adjoining owner has all the rights incidental to the property which do not interfere with this public right of passage. Thus, if a mine were discovered under the road, the adjoining owner would have the sole right to dig it and keep the contents; all that he would require to attend

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to would be, to leave sufficient support to the surface of the road. So, in like manner, where there are strips of land at the side of the road on which trees or grass grow, these belong solely to the adjoining owner, and the public have no right to their use. Another remarkable consequence follows, that if, for example, a gas company or a water company were to presume to take up the H. in order to lay pipes under the surface, this is not only an indictable nuisance as regards the public, inasmuch as it obstructs the use of the road for the time being, but it subjects the company to an action of trespass at the suit of the adjacent owner, whose property consists of all that lies under the surface of the highway. Another consequence of the same rule is, that if a person is loitering on a H., not with the intention of using it as a road, but for some other purpose, the courts have held that he may be indicted.

The repair of a H., in general, devolves on the county, or the town, or on the occupiers of the land in the vicinity; probably for the reason that they use those highways most, and should therefore attend to the necessary repair. In some rare cases, however, the burden of repair is fixed on the owner of the adjoining land, if it can be proved that he has always, from time immemorial, been in the habit of repairing, it being then presumed that there were some good reason for this. But even when bound to repair, the owners of the district cannot be compelled to pay for widening the road. The common remedy, accordingly, when a road is out of repair, is to indict the town, or county concerned, when, if guilty, the proper official will be bound to make a rate, and pay the expenses.

Highways are kept in repair usually by a H.-rate or road-tax levied by the proper officer, who is annually appointed by the taxpayers, and who is vested with the control of the surface of the H. to a limited extent for the purpose of keeping it in due order. Certain specific uses, or rather abuses, of the H. are often forbidden by statute, such as horsemen riding on footpaths, the tethering of cattle on the sides of the highway, playing at games, baiting bulls, lighting fires, firing off squibs, depositing materials, etc., on the highway. In statutes dealing with offenses connected with the H., such as negligence of carriers, etc., 'H.' is held to include navigable rivers. But railways have been held not to be included in the term H. in a statute assigning the death penalty for robbery on the highway.

Many highways are called *turnpikes*, from the fact of their having toll-gates, bars, or turns across them, and are managed by commissioners or trustees. This is always done by some local legislative act. Where a new road is considered to be of great public benefit, the neighboring proprietors obtain a legislative act (or its equivalent) to make it, with powers to take compulsorily the requisite land, and to raise money for buying such land, as well as to keep up the road thereafter; and as a means of paying off all this expense, to erect a toll-gate, and levy a tax or toll on all who use the road. Sometimes the soil of the

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turnpike-road is vested in these trustees. Several exemptions from paying toll may be created by statute, e.g. in the case of funerals, etc. Turnpikes with toll-gates were formerly very numerous in the United States; but are now comparatively few.—See TOLL.

HIGHWAYMAN: one who commits the offense of robbing or assaulting on the highway: see LARCENY: ROBBERY: ASSAULT.

HIG'LER: see HAWKER.

HIGRE, n. *hī'gēr* [Bav. *hidl*, the rising of the underground water-level: Fris. *hieen*, to rise or swell, as water: Icel. *Ægir*, the sea-god, the sea]: the commotion made in certain rivers by the meeting of the tidal wave and the river current; the bore; a sudden inundation of the sea—also named EAGRE, EGRE, HYGRE, or AKER.

HILARIA, *hī-lā rī-ā*: ancient festivals in Rome, annually celebrated Mar. 25, in honor of nature's resumption of vigor. Libations were drunk to the mother of the gods, her statue was carried through the streets of the city with demonstrations of joy, business and every appearance of sorrow and mourning were suspended, gayety and pleasure ruled the city, and the people were granted the privilege of dressing themselves as they chose even to assuming magisterial robes.

HILARIOUS, a. *hī-lā'rī-ūs* [L. *hīlārīs*; Gr. *hīlārōs*, merry, joyful (see HILARIA)]: mirthful; merry. HILARITY, n. *-lār'ī-tī* [F. *hilarité*—from L. *hilaritātem*]: mirth excited by social pleasure; gayety.—SYN. of 'hilarity': joviality; jollity; glee; cheerfulness; mirth; merriment; gayety; joyousness; exhilaration.

HILARY, a. *hīl'a rī* [from *St. Hilary*]: in *England*, applied to a legal term (Jan. 11–31) during which the courts of law sit at Westminster in banc; commencing near the time of St. Hilary's day, Jan. 14.

HILARY, *hīl'a-rī* (or HILARIUS, *hī-lā'rī-ūs*): Bishop of Poitiers (Pictavium), eminent doctor of the church: b. at Lemonum (Poitiers), of pagan parents, about the end of the 3d c.; d. 368, Jan. 13. Though not among the most voluminous of the Latin Fathers, yet, from the nature of the subjects on which he wrote, chiefly connected with the Arian controversy, H. occupies an important place in the patristic literature of the Western Church. His conversion to Christianity was mainly the result of his own study of the prophecies, and did not take place till he was advanced in life. About 350 he was elected bishop of his native city, and immediately rose to the first place in the animated contest of parties in the Arian controversy. Having provoked the displeasure of the court party, he was imprisoned, and sent into exile in Phrygia; but he appears again in the council of Seleucia 359, and soon afterward was permitted to resume his see, where he died. The Rom. Cath. church holds his day, Jan. 14. His most important work is that on the Trinity, but his three addresses to Emperor Constantius, by their vehemence, and by the

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boldness of their language, have most attracted the notice of critics. H.'s theological writings are valuable especially for the history of the Arian party, particularly for the doctrinal variations of that sect, and its successive phases between the council of Nice and the first council of Constantinople. He has been called the Athanasius of the West. The best edition of the works of St. H. is that of the Benedictine Dom. Constant (Paris 1693), or the reprint of it with additional matter by Maffei (Verona 1730).

HIL'ARY (or **HILA'RIOUS**) OF ARLES, SAINT: Bishop of Arles: abt. 403–449. He was educated at the celebrated monastic school of Lerins, and made bishop of his native city 429. As metropolitan of Arles, he presided at several synods, especially at Orange 441, the proceedings of which involved him in a serious controversy with the pope, Leo the Great. A deposed bishop, named Chelidonius, having carried an appeal to Rome, a council was summoned by Pope Leo, at which H. was present, and in which the condemnation of Chelidonius, as well as that of another bishop, Projectus, was reversed. H., however, refused to submit to the decision, and soon quitted Rome—a proceeding which drew on him a very severe animadversion. He did not question the authority in itself, but he maintained that it was uncanonically exercised. In the end, however, he sought a reconciliation with Pope Leo, and the dispute was brought to an amicable termination. H. died at Arles.

HILDA, *hîl'da* (or **HILD**), SAINT: 614–680; b. England: abbess. She was a member of the royal house of Northumbria, and grandniece of king Edwin; was baptized when 14 years old, settled in the monastery of Chelles, France, on the pagan reaction after Edwin's death, was recalled to England by Bp. Aidan, consecrated a nun 647, became abbess of Hartlepool 649, founded the famous monastery at Streaneshalch, now Whitby, in Yorkshire, 658; and ruled her community of monks and nuns with rare skill and to noble purpose till her death. She was a woman of exalted piety, successful in converting pagans, and received in her institution many eminent men, including St. John of Beverley, Cædmon the Saxon poet, Hedda, and Wilfrid. Several churches in England have received her name, and her feast is observed Nov. 18.

HIL'DEBRAND: see GREGORY VII.

HILDEN, *hîl'dén*: town of Rhenish Prussia, nine m. e.s.e. from Düsseldorf, on the Itterbach. It is a rapidly increasing place, with woolen and linen manufactures. Pop. (1880) 7,354.

HILDESHEIM, *hîl'des-hîm*: old town of Hanover, cap. of a Prussian administrative division, on the river Innerste, in a pleasant valley surrounded by hills, 24 m. s.e. of Hanover. It is a very quiet town, with very old houses, the upper stories of which are furnished with balconies. It has been a bishop's seat since 822, and its cathedral, dating from the beginning of the 11th c., has bronze gates (date, 1015) 16 ft. high, covered with bas-reliefs. There are in the cathedral beautiful paintings on glass, and many

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art and other treasures. The church of St. Godehard, considered a master-piece of architecture, dates from 1133 (restored 1852), and is surmounted with three pyramidal towers. St. Michael's Church, nearly an unaltered basilica, dates from 1022 and 1186. In 1868, Oct., some soldiers, digging on the Galgenberg, close by H., discovered at a depth of 9 ft. about 60 silver vessels, belonging apparently to the best period of Roman art. Pop. (1890) 33,481.

HILDING, n. *hĭl'dĭng* [prov. Eng. *hilderling*, or *hinderling*—from *hinder*, behind, and *ling*, little]: in *OE.*, a menial or base creature; a cowardly paltry fellow; a word applied to both sexes: **ADJ.** base and cowardly; sorry; paltry.

HILDRETH, *hĭl'drĕth*, **RICHARD**: 1807, June 22—1865, July 11; b. Deerfield, Mass.: author. He graduated at Harvard College 1826, was admitted to the bar in Boston 1830, practiced two years, and then became a founder and co-editor of the *Boston Atlas*. He was in Fla. for his health 1834–36; Washington correspondent of the *Atlas* 1836–39; edited *The Guiana Chronicle* and *The Royal Gazette* in the interest of the British govt.'s plan of abolishing slavery, in Demarara, British Guiana, 1840–43; wrote for the *New York Tribune* and Appleton's *American Cyclopædia*; was appointed U. S. consul at Trieste 1861; and died in Florence, Italy. His chief work was a *History of the United States*, 6 vols. (New York 1849–56); beside which he published *The Slave, or Memoir of Archie Moore* (1836), republished as *The White Slave* (1852); *Theory of Morals* (1844); *Theory of Politics* (1853); *Despotism in America* (1854); *Japan as it Was and Is* (1855); *History of Banks* (1857); and *Atrocious Judges*, based on Lord Campbell's *Lives of the Chief Justices of England* (1857).

HILE, n. *hĭl*: see **HILUM**.

HILGARD, *hĭl'gard*, **JULIUS ERASMUS**: scientist: b. Zweibrücken, Germany, 1825, Jan. 7; son of Theodore Erasmus H., lawyer and author. He came to the United States with his father and settled in Belleville, Ill., 1835, studied civil engineering in Philadelphia 1843–45, became an asst. on the U. S. coast survey 1845, asst. in charge of the bureau at Washington 1862, and succeeded Prof. Alexander D. Bache as supt. 1881, holding the office till 1885. He had charge of the construction of standard weights and measures, was appointed a member of the National Acad. of Sciences 1863, member of the international metric commission and elected to its permanent committee 1872, and pres. of the American Assoc. for the Adv. of Science 1874. d. 1891, May 8.

HILL, n. *hĭl* [*O.Dut.* *hĭl*, or *hille*; *Dut.* *heuvel*; *Ger.* *hügel*, a hill: *Low Ger.* *hull*, a mound: *Fris.* *hovel*, a hunch in the back]: a natural elevation of the land less in height than a mountain. **HILLSIDE**, n. the side of a hill. **HILL'Y**, a. -*ĭ*, abounding with hills. **HILLOCK**, n. *hĭl'ök*, a small hill.

HILL, n. *hĭl* [see **HULL**]: in *Scot.*, the outer covering or shell, as of the pod of the pea or bean, the skin of a goose-

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berry, and the like: V. to take off the outer covering; to hull. HILL'ING, imp. HILLED, pp. *hild*.

HILL, *hil*, AMBROSE POWELL: 1825, Nov. 9—1865, Apr. 2; b. Culpeper co., Va.: soldier. He graduated at the U. S. Milit. Acad. and was assigned to the artillery 1847, served through the Mexican and Seminole Indian wars, was on coast survey duty 1855-60, on leave of absence 1860, Oct.—1861, Mar., resigned his commission in the army, and on the secession of Va., was appointed col. 13th Va. vols. in the Confederate army. He was promoted brig.-gen. for services at the first Bull Run, maj.gen. for Williamsburg, was div. commander in the peninsula, present at the battles of Cedar Mountain, the second Bull Run, and Chantilly; captured Harper's Ferry 1862, Sep.; was at Antietam, Fredericksburg, Chancellorsville; commanded the corps after 'Stonewall' Jackson's death, was promoted lieut.gen. for Chancellorsville, and killed in the final assault on the Confederate lines before Petersburg.

HILL, BENJAMIN HARVEY: 1823, Sep. 14—1882, Aug. 19; b. Jasper co., Ga.: statesman. He graduated at the Univ. of Ga. 1844, and was admitted to the bar and began practicing in La Grange, Ga., the following year. From the outset of a legal career in which he early achieved marked distinction, he became active in state politics as an adherent of the whig party, and gained more than a local renown as an orator. He was elected to the legislature 1851; was a Fillmore presidential elector for his state at large 1856; and went to the state senate as a pronounced unionist 1859. In the presidential election 1860 he was on the Bell and Everett electoral ticket. The following year he was elected to the state secession convention and made a powerful speech against the secession ordinance, but subsequently voted for it. During the civil war he served in the Confederate senate, and after its close was confined for a short time in Fort Lafayette. In the reconstruction days he opposed the policy of Pres. Johnson and the acts of congress, and in 1872 warmly supported the candidacy of Horace Greeley for the presidency. Three years afterward he was elected to congress to fill a vacancy, and there greatly enhanced his fame by a noteworthy speech on the amnesty bill. He was re-elected for a full term 1876, and before its close he was chosen to the United States senate, where he served till his death. In the house he supported the electoral commission bill, and in the senate he served on the committees on foreign relations, privileges and elections, and revolutionary claims. In view of his eminent abilities and large influence, his death was considered most untimely by public men of all parties. A life-size statue of H. in white marble, on the handsomest spot in Atlanta, perpetuates the form and features of one of the most distinguished sons of Georgia.

HILL, DANIEL HARVEY: 1821, July 12—1889, Sep. 29; b. Hill's Iron-Works, York district, S. C.: military officer. He graduated at the United States Military Academy 1842; was on the Me. boundary during the frontier dispute with

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Great Britain; served through the Mexican war, distinguishing himself at Chapultepec, Contreras, and Churubusco; resigned from the army and was engaged in educational work in Va., N. C., and S. C. till the beginning of the civil war; and became col. of a N. C. regt. and won the battle of Big Bethel 1861. In 1862 he became a maj.-gen. in the Confederate service, and was conspicuous on the Peninsula, in the first Md. campaign, the battle of Fredericksburg, and the Chancellorsville campaign. He was promoted lieut.gen. 1863, July 11, and surrendered with Gen. Joseph E. Johnston 1865, April. After the war he was pres. of the Univ. of Ark. and of the Ga. Military and Agricultural College, and engaged in literary work.

HILL, DAVID BENNETT: lawyer: b. Havana, Schuyler co., N. Y., 1843, Aug. 29. He received a common-school and academical education, removed to Elmira 1863, studied law, and was admitted to the bar there 1864. The same year he was appointed city attorney and entered political life, was member of the legislature 1869-71; pres. of the democratic state conventions 1877, 81; delegate to the national conventions 1876, 81; mayor of Elmira 1882; the same year elected lieut.gov. of N. Y. on the ticket with Grover Cleveland; became gov. on the resignation of Pres.-elect Cleveland 1885, Jan. 6: served to the end of the term, and was elected gov. 1885, and re-elected 1888; and was elected United States senator for the term ending Mar. 4, 1897, succeeding William M. Evarts 1891. For a number of years his antagonism of President Cleveland was most pronounced, but amicable relations appeared to be restored 1894, and H. supported the president's views in a notable speech against the income-tax clause of the compromise tariff bill in the senate June 21. 1894, Sep. 26, he was again chosen democratic candidate for gov., but was defeated in Nov. by 156,108 plurality. In the 53d congress (1893, Mar. 4—1895, Mar. 4), he was chairman of the committee on immigration, and a member of those on fisheries, judiciary, post-offices and post-roads, territories, and the organization, conduct, and expenditures of the executive departments. H. was elected president of the New York Bar Assoc. 1886, and served two terms. He has been mentioned frequently for the democratic presidential nomination, receiving 115 votes in the convention of 1892.

HILL, DAVID JAYNE, A.M., LL.D.: 1850, June 10———; b. Plainfield, N. J.: educator. He graduated at Lewisburg (now Bucknell) Univ. 1874, and became prof. of rhetoric there 1877 and pres. 1879, and pres. of the Univ. of Rochester 1888, resigning the last office 1895, Nov. 20; was appointed 1st assist. sec. of State, 1898; and Minister to Switzerland, 1903. Among other works he published *Elements of Rhetoric and Composition* (1879); *Principles and Fallacies of Socialism* (1885); *The Elements of Psychology* (1887); *The Social Influence of Christianity* (Boston 1887); and *Genetic Philosophy* (1893). He received the degree LL.D. from Madison Univ. 1884.

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HILL, GEORGE WILLIAM, PH.D., LL.D.: 1838, Mar. 3—
—————; b. Nyack, N. Y.: astronomer and mathematician. He graduated at Rutgers College, N. J., 1859, and was an assistant in the office of *The Nautical Almanac* at Washington, D. C., from his graduation till 1892, when he resigned to pursue the original researches which brought him distinction. The Royal Astronomical Soc. of London awarded him its gold medal 1887 for his labors on the mathematical theories of celestial motions. and the Univ. of Cambridge gave him the degree LL.D. 1892.

HILL, JOHN: 1821, June 10—1884, July 24; b. Catskill, N. Y.: manufacturer. He received a private school education; became connected with the iron-works at Boonton, N. J., 1845; was a member of the state legislature 1861, 1862, and 1866, and speaker the last term; and was a republican member of congress 1867-73 and 1881-83. He was the author of the bills in congress providing for the issue of postal-cards and for reducing letter postage to 2 cts. per oz.

HILL, NATHANIEL PARKER: 1832, Feb. 18—
—; b. Montgomery, N. Y.: capitalist. He was educated at Brown Univ.; was tutor and prof. there of chemistry applied to the arts 1858-64; studied the treatment of ores in Wales and Germany 1865-6; and organized and became manager of a smelting company in Colo. 1867. In 1872-3 he was a member of the territorial council of Colo., and 1879-85 a rep. U. S. senator from that state. By demonstrating the possibility of profitably extracting gold and silver from the Colo. ores, and by his large share in the development of the mining industry, he probably did more to insure the prosperity of that state than any other person.

HILL, ROWLAND: 1744, Aug. 13—1833, April 11; b. Hawkstone, England: clergyman. He was a son of Sir Richard H.; was educated at Eton and at St. John's, Cambridge, England; became acquainted with George Whitefield and preached in prisons and private houses while at college; was prevented from joining the Methodists by his family: took orders in the Church of England though six bps. refused to ordain him on account of his Calvinistic views; and was appointed to the parish of Kingston 1773. After Whitefield's death his followers made several proposals to H. to become his successor, but he declined all, and retained his place in the Church of England till his death, though following many of the Methodist usages. He preached in the open air every day in the week to large congregations, speaking extempore, and indulging abundantly in anecdotes, wit, and quaint maxims. The death of his father brought him considerable property 1780, and he built Surrey Chapel, on Blackfriar's road, London, for his own use, laying the first stone 1782, and holding his first service 1783, June 8. For 50 years he preached here to crowded audiences in the winter months, and made 'gospel-tours' through England, Scotland, Ireland, and Wales, in summer. He had a voice of great power, and exerted great influence over his audiences. He seemed to have little time for authorship. but published several works,

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of which his *Village Dialogues* (1801, 34th ed. 1824) is best known.

HILL, Sir ROWLAND, K.C.B., D.C.L.: English postal reformer: 1795, Dec. 3—1879, Aug. 27; b. Kidderminster. He was named after Rowland H., the preacher. His father conducted a school near Birmingham, known in connection with the 'Hazelwood system of education' (afterward removed to Bruce Castle, Tottenham), and in which H. was engaged as a teacher until 1833. He there joined an association which obtained an act for establishing the colony of South Australia, with the design of reducing to practice Gibbon Wakefield's scheme of colonization. H. became sec. to the royal commissioners, who at first managed the affairs of S. Australia. He was also a member of the committee of the Soc. for Diffusion of Useful Knowledge. The high rate of postage had for many years engaged his attention, and 1837 he published a pamphlet recommending a low and uniform rate of postage throughout the British Isles. Petitions were poured into the house of commons in favor of H.'s plan, and in 1837 the house appointed a committee to investigate the merits of penny-postage. In 1840, the principle of a uniform rate was adopted, and an experimental charge of 4d. per letter was levied. This was soon followed by the present uniform penny-rate. H. was placed in the treasury, and was working out his measure when the tory government succeeded to power, and dismissed him. A subscription was started to reward a public benefactor, as well as to mark the public sense of his dismissal, and the sum of £15,000 was presented to Hill. In 1846, when the whigs returned to office, H. was appointed sec. to the postmaster-general. In 1854, he became sec. to the post-office, an appointment which he held till failing health compelled him to resign 1864. His full salary of £2,000 a year was awarded him for life, and he also received a parliamentary grant of £20,000. He was made K.C.B. 1860, and D.C.L. (Oxon) 1864 (see POST-OFFICE). The money-order office is one of the offshoots of penny-postage; and the system of the post-office savings-banks was organized in 1861 by H. with his usual administrative ability. He was buried in Westminster Abbey.—His eldest brother MATTHEW DAVENPORT H. (1792–1872), long the recorder of Birmingham, distinguished himself by his labors for education, and the reformation of criminals.—Another brother, FREDERIC H., was the first to propound and enforce those humane principles upon which modern prison discipline is founded; and his work, *On Crime*, is a standard authority for legislators. See *The Life of Sir Rowland Hill* (2 vols. 1880).

HILL, Viscount (ROWLAND HILL), G.C.B.: British general and commander-in-chief: 1772, Aug. 11—1842, Dec. 10; b. Prees, Shropshire; of an ancient and distinguished family, second son of Sir John H., Bart., of Hawkstone; and nephew of Rowland H., preacher. He entered the army at the age of 15, and obtained a captaincy before the age of 20. He took part in the disastrous campaign in

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which Sir John Moore lost his life, and served in the campaigns of 1809, 10, 11, under the Duke of Wellington, showing conspicuous gallantry, as well as great talents as a commander. In 1809 he was made lieutenant-general. In the Peninsular engagements, he was usually intrusted with the most important duties next to those which developed upon the Duke of Wellington; and when the army returned home, the fame of H. was second only to that of the great commander. He was created Baron Hill of Almaraz and Hawkstone, received a parliamentary grant of £2,000 a year; and both title and annuity were granted to his nephew in remainder. He commanded a division at Waterloo, and remained with the army of occupation, as second in command, until it evacuated the French territory. He succeeded the Duke of Wellington 1828 as commander-in-chief of the army. H. united great daring with great sagacity and coolness of judgment; and his unfailing regard for the moral and bodily welfare of his soldiers, made him beloved by them all. In 1842, his health declined, and the Duke of Wellington again took command of the army. After his resignation H. was created a viscount. He died unmarried at Hardwicke Grange, county of Salop, and was succeeded in his titles and estates by his nephew, Sir R. Hill, Bart.

HILL, THOMAS, D.D., LL.D.: Unit. minister: b. New Brunswick, N. J., 1818, Jan. 7. He graduated at Harvard College 1843, and the Cambridge Divinity School 1845; was pastor of a Unit. church in Waltham, Mass., 1845-59; pres. of Antioch College, O., and afterward pastor of the Church of the Redeemer, Cincinnati, 1859-62; pres. of Harvard College 1862-68; member of the Mass. legislature 1871; accompanied Prof. Agassiz on his S. American expedition; and on his return became pastor of the Unit. church in Portland, Me. He belongs to the strongly evangelical wing of the Unitarians. He is a mathematician of rare ability, and has made valuable discoveries in the law of curves. His publications include *Elementary Treatise on Arithmetic* (1845), *Geometry and Faith* (1849, 74), *Treatise on Curves* (1850), *First Lessons in Geometry* (1855), *Liberal Education* (1855), *The True Order of Studies* and *Jesus the Interpreter of Nature* (1859), *The Natural Sources of Theology* (1875), and *Practical Arithmetic* (1881). He received the degree D.D. from Harvard College 1860, and LL.D. from Yale College 1863. He d. 1891, Nov. 21.

HILLAH, or HILLA, *hîl'la*: town of Turkey in Asia, pashalic of Bagdad, 60 m. s. of the city of Bagdad; on both banks of the Euphrates, and built on the ruins of ancient Babylon (q.v.). Here the Euphrates is 450 ft. in width, and is crossed by a floating bridge. H. is a fortified town, contains a citadel, mosque, and several well-stocked bazaars. Dyeing, tanning, and manufactures of silk are here carried on. Pop., which is fluctuating, 7,000 to 10,000.

HILLARD, *hîl'ard*, GEORGE STILLMAN, LL.D.: 1808, Sep. 22—1879, Jan. 21; b. Machias, Me.: lawyer. He graduated at Harvard College 1828, was admitted to the bar in Boston 1833; became an editor of the *Christian Reg-*

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ister (Unit.) the same year, was subsequently associated with Charles Sumner in editing *The Jurist*; was state senator 1850, member of state constitutional convention 1853, city solicitor 1854-56, and U. S. dist. atty. for Mass. 1866-70. He delivered and published numerous orations and addresses, was author of several memoirs privately published, brought out a *Memorial of Daniel Webster* and *Six Months in Italy* (1853), a series of *Readers and Selections from the Works of Walter Savage Landor* (1856), *Life and Campaigns of George B. McClellan* (1864), *Political Duties of the Educated Classes* (1866), and, with Mrs. Ticknor, *Life of George Ticknor* (1873). He received the degree LL.D. from Trinity College 1857.

HILLEL, *hīl'lēl* (sometimes HILLEL HAZĀKĒN, i.e. H. the Elder): distinguished Jewish rabbi, concerning whom all our information is derived from the Talmud. Its highly eulogistic account while exaggerated and, in some particulars, contrary to established facts, is yet by the most competent critics accepted as to its general outline. According to it Hillel was born at Babylon (of parents who though poor were descendants of King David) about B.C. 75; and died a few years after the beginning of the Christian era. Thirsting for knowledge, he went in his youth to Jerusalem, and, supporting himself by daily labor, paid half of his scant wages for admission in the evening to the famous school of Shemiah and Abtalion. Once, in winter and on the eve of the Sabbath, having no money and being refused admission by the janitor he climbed up to the window of the classroom, where he was first benumbed with cold and then half buried in a deep fall of snow. In the morning the teachers found the window darkened by a motionless human form enveloped in snow. They bathed him, rubbed him with oil, and placed him before the fire, saying 'Surely his deliverance excuses the violation of the Sabbath which it compels.' After that, being welcomed freely to the school, he made great attainments in learning, was honored by Herod, and became both the founder of a school and the head of a family which included in it eminent teachers like himself—Simon, Gamaliel, and a second Hillel. Shammai, who perhaps was one of his pupils, became the head of a rival and, at times, bitterly hostile school. The disputes between them were, generally, about extremely unimportant things. Yet, comparatively, H. was like a star in a dark sky. Even in the midst of trivial casuistry his decisions often leaned to the liberal and spiritual side, and gave rise to the proverbial formula, 'Be gentle, as Hillel; not harsh, as Shammai.' Of similar character were several sayings attributed to himself: 'Be disciples of Aaron who pursued peace, loved all men and attracted them toward the law.' 'What thou wouldst not for thyself, do not to thy neighbor. This is the whole law and its application is, Go and do this.' 'The more meat a man has, the more food is there for worms; the more wealth the more care: but the more law, the more life; the more righteousness, the more peace.'

HILL-FOLK, *n*, *hīl'fōk*: in *chh*, *hist.*, name sometimes

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given to the Cameronians in Scotland, who were driven to hold their 'conventicles' secretly among the hills, their doing so anywhere being held illegal.—In *Scand. myth.*, a class of beings intermediate between elves and human beings, inhabiting caves and small hills.

HILLIS, *hīl'lis*, NEWELL DWIGHT: an American clergyman; b. in Magnolia, Ia., 1858, Sept. 2; was educated at Iowa College, Lake Forest University, and McCormick Theological Seminary; entered the Presbyterian ministry; held pastorates in Peoria, Evanston and Chicago, Ill., till 1899, when he removed to Brooklyn, to become pastor of Plymouth Church. He was the author of *The Investment of Influence; A Man's Value to Society; How the Inner Light Failed*, etc.

HILLSDALE, *hīlz'dāl*: city, cap. of H. co., Mich.; on the St. Joseph river, and at junction of the Lake Shore and Mich. Southern and the Detroit H. and Southwestern railroads; 33 m. w. of Adrian, 66 m. w. of Toledo, 177 m. e. of Chicago. It contains a court-house, 10 churches, foundries, steam flour and planing-mills, machine-shops, chair factory, 1 national bank (cap. \$55,000), 1 state (cap. \$50,000), 1 savings (cap. \$60,000), 1 private, high school, and Hillsdale College (Freewill Bapt.), founded at Spring Arbor 1844, chartered 1845, removed to H. 1855, partially destroyed by fire 1874. and rebuilt: open to both sexes, and (1902) under the presidency of Joseph W. Mauck. Pop. (1870) 3,518; (1880) 3,441; (1890) 3,915; (1900) 4,151.

HILL STATES: several small principalities of India on the left or e. side of the Upper Sutlej, comprising about 10,000 sq. m., and about 550,000 inhabitants. With the exception of this aggregate name, they have but little in common with each other. Perhaps 20 may be reckoned which have a distinct existence—those best known being Bhagul, Bussahir, and Gurwhal.

HILL-TRIBES, *n. hīl'trībz*: in *ethnol.*, remnants of the early tribes found among the inhabitants of hills. As a rule, there are such remnants of the tribes which possessed the plains before their present occupants seized on them. Thus, in the British Isles, the Gaelic speaking population of the Highlands once occupied also the Lowlands of Scotland, and the inhabitants of the Welsh hills the plains of England. The term hill-tribes is now used chiefly of the Indian aborigines in the Himalayas, the Vindhya, the Western Ghauts, the Neilgherry Hills, etc. They are divided into many tribes, as Gonds, Khoonds, Bbeels, etc., are mostly Turanian, and were in India before the Brahmans had invaded the land, have a primitive faith, in some cases attended by human sacrifice, speak truth, are brave, but rude and uncivilized. They number several millions. Many of them are becoming Christians in belief.

HILO, *hī'lō*: seaport of Hawaii, on Byron (Waiakea) Bay on the e. coast; second town in importance in the kingdom, having a spacious harbor secure the greater part of the year, and great natural beauty. It has four churches, Prot. and

HILPRECHT—HIMALAYA.

Rom. Cath. for the Hawaiians, a foreign church and a Bethel for seamen. Rains are frequent and heavy, and supply 50 streams in the district that empty into the sea within a coast limit of 25 m. Pop. (1897) estimated at 10,000.

HILPRECHT, *hīl'prēcht*, HERMAN VOLRATH: an American educator; b. in Hohenerxleben, Germany, 1859, July 28; was graduated at the Ducal Gymnasium, Bernburg, Germany, 1880; afterward studied theology, philology, and law at the University of Leipzig; and became professor of Assyrian and Comparative Semitic philology at the University of Pennsylvania, 1886. He is a leading authority in cuneiform palæography; and curator of the Semitic section of the museum of the University of Pennsylvania, which contains over 27,000 original cuneiform documents; was the scientific director and Assyriologist of the University of Pennsylvania expedition to Nippur, Babylonia, 1888-99; and made frequent scientific explorations in Asia Minor and Syria. He has published *Old Babylonian Inscriptions, Chiefly from Nippur; History of the Babylonian Expedition of the University of Pennsylvania, to Nippur*; etc.

HILT, n. *hīlt* [Dut. *hīlte*, the hilt of a sword—from *holte*, a cavity: Icel. *hialt*, the knob at each end of a handle]: the handle of anything, chiefly a sword. HILT'ED, a. having a hilt; in *her.*, indicating the tincture of the handle of a sword.

HIM, pron. *hīm* [AS. *hīne*, *hīm* (see HE)]: the obj. case of *he*; *his*, poss. HIMSELF, masc. [*him*, and *self*]: a reciprocal pron., joined to a noun or pronoun to render it more emphatic. HERSELF, fem. THEMSELVES, plu. com. gend. BY HIMSELF, alone; unassisted.

HIMĀLAYA, *hīm-ā'la ya* or *hīm-a-lā'ya* ['the abode of snow,' from Sanskrit, *hima*, snow, and *ālaya*, abode]: in south central Asia; highest and most stupendous mountain system on the globe. It is not, as sometimes represented, a single chain, but a range of rugged snowy peaks extending from the high table land of Tibet, and separated by deep gorges, the outlets of the streams originating in the melted snow and ice of the interior. The mass of the H. proper extends from the great bend of the Indus in the w., to the junction of the Sanpu with the Brahmaputra in the e., or long. 73° 23'—95° 40' e., nearly 1,500 m.; average breadth abt. 150 m. The mean elevation of the range is 16,000 to 18,000 ft., but 45 of its peaks are now known to exceed 23,000 ft. in height. Of these there are in Kumaon, Nanda Devi, 25,749 ft.; in Nepaul, Dhawalagiri, 26,826 ft.; Mount Everest, 29,002 ft. (highest known point on the globe); and Kunchinjunga, 28,156 ft.; in Bhotan, Chumalari is 23,946 ft. above the sea. The s. surface of the H. comprises three distinct regions—first, adjoining the plains of Hindustan, the *Tarai*, a grass-covered marshy plain; next, the great belt of *Saul Wood*, stretching along a great part of the range; and beyond it the *Dhuns*, a belt of detritus, extending to the foot of the true mountains.

HIMĀLAYA.

Snow falls at rare intervals in the mountains as low as 2,500 ft., but at 6,000 ft. snow falls regularly every winter. The limit of perennial snow in the H. is 16,200 ft. on the s., and 17,400 ft. on the n. side; an anomaly probably owing to the dry atmosphere of Tibet, and the small quantity of rain and snow that falls there. The high range of the H. forms a vast screen which intercepts and condenses nearly all the moisture carried by the winds from the Indian Ocean, and deposits it on the southern face of the mountains; hence at Chirra Punji, 4,200 ft. above the sea, as much as 600 inches of rain has been known to fall in one year. Glaciers are found in every part of the range above the snow line, one of these, that of Deotal in Gurhwal, is 17,945 ft. above the sea. The mean height of the passes in the H. is 17,800 ft., the highest known is Ibi-Gamin Pass into Gurhwal, 20,457 ft., and the highest used for traffic is the Parang Pass in Spiti, 18,500 ft. above the sea. All the passes above 16,000 ft. are closed with snow from Nov. till May. Trees and cultivated grains attain their highest limits in the mountains at 11,800 ft. and shrubs at 15,200 ft. above the sea. The tea-plant can be cultivated along the entire s. face of the H. to an elevation of 5,000 ft., but the best is produced 2,000 to 3,000 ft. above the sea. Tigers and apes are found at an elevation of 11,000 ft., and the leopard at 13,000 ft., while the dog follows the herds over passes 18,000 ft. high. Snakes are found at an elevation of 15,000 ft., but the highest limit of the mosquito is 8,000 ft. above the sea. The geological structure of the Himalayas consists of crystalline rocks, with granite, gneiss, and a schistose formation, comprising micaceous, chloritic, and talcose schists. Earthquakes are frequent in the central range. About the meridian of 82° e., near the Mansarowar Lake, a great transverse range, which further n. is called the Giang-ri Mountains, abuts against the H. from Tibet. This ridge forms the watershed between the Sanpu (afterward the Brahmaputra) on the e., and the Indus and Ganges on the west. These vast river systems, with their magnificent tributaries, derive their chief supplies from the melting of the snows in the H., and consequently are in flood at the hottest season of the year when the moisture which they bring is most needed.

On account of the majestic height of this mountain-range, and the apparent impossibility of reaching its summit, the imagination of the ancient Hindus invested it with the most mysterious properties, and connected it with the history of some of their deities. In the Purânas, the H. is placed s. of the fabulous mountain Meru, which stands in the centre of the world (see MERU), and described as the king of the mountains, who was inaugurated as such when Prithu was installed in the government of the earth. As the abode of Siva, he is the goal of penitent pilgrims, who repair to his summit in order to win the favors of this terrific god. His wife was Menâ, whom the Pitris or demigods Vairâjas engendered by the mere power of their thought.

HIMERA—HINCMAR.

HIM'ERA: see TERMINI.

HIMMA'LEH: see HIMÂLAYA.

HIMYARIC, a. *hîm-yar'îk*, or HIMYARITIC, a. *hîm'yâr-î'tîk* [*Himyar*, an anc. king of Yemen, Arabia]: pertaining to the primitive people, or their language, of s. Arabia—comprising all the races from the Euphrates to Abyssinia who trace their origin to the mythical Himyar nearly 2500 years B.C. The H. inscriptions (some of which are in the British Museum, dating prob. from the later Himyarite kings B.C. 100–A.D. 500) exhibit the oldest known forms of the language as spoken in s. Arabia: see ARABIAN LANGUAGE and LITERATURE. HIMYARITES, the H. people, subjugated by the Mohammedans, abt. A.D. 630: see ARABIA.

HIN, n. *hîn* [Heb.]: an anc. Hebrew measure containing about twelve pints.

HINCKLEY, *hîngk'li*: town in Leicester, England, 13 m. s.w. of the town of Leicester, 99 m. n.n.w. of London. Its parish church, with a beautiful old oak roof, is supposed to have been erected during the reign of Edward III. H. has manufactures of cotton hosiery, and is the centre of the stocking-weaving district. Part of the town is in Warwickshire. Pop. (1881) 7,673; (1891) 9,638.

HINCMAR, *hînk'mâr*: abt. 806–882: celebrated French churchman, whose birth-place is unknown, but from his being of the family of the Counts of Toulouse, is presumed to have been in that province. He was educated in the monastery of St. Denis, and, with the sanction of the council of Paris (829), he was intrusted with framing and executing a plan for the reformation of the monastery. Sometime afterward, he was named abbot of the abbeys of Compiègne and St. Germain; and 845 was elected Abp. of Rheims. The most important event, considered historically, in his career, is his controversy with Pope Nicholas I. 862 (see NICHOLAS I.). Rothadius, Bp. of Soissons, and suffragan of H., deposed a priest of his diocese, who appealed to H. as metropolitan, and was ordered by him to be restored to office. Rothadius resisting this order, and having been, in consequence, condemned and excommunicated by the abp., appealed to the pope, who at once ordered H. to restore Rothadius, or to appear at Rome in person or by his representative, to vindicate the sentence. H. sent a legate to Rome, but refused to restore the deposed bishop; whereupon Nicholas annulled the sentence, and required that the cause should again be heard in Rome. H., after some demur, was forced to acquiesce. The cause of Rothadius was re-examined, and he was acquitted, and restored to his see.

The conduct of H. is historically interesting also in relation to the temporal power of the mediæval papacy (see POPES). Under the successor of Nicholas, Adrian II., a question arose as to the succession to the sovereignty of Lorraine, on the death of King Lothaire, the pope favoring the pretensions of Emperor Lewis in opposition to those of Charles the Bold of France. To the mandate which Adrian

HIND.

addressed to the subjects of Charles and to the nobles of Lorraine, accompanied by a menace of the censures of the church, H. offered firm and persistent opposition, boldly declaring that the Roman see had no right to intermeddle in such an affair, and that the threatened papal excommunication would have no validity; and the result was favorable to H.'s view. He was equally firm in resisting the undue extension of the royal prerogative in ecclesiastical affairs. When Emperor Lewis III., in opposition to the solemn judgment of the council of Vienne, sought to obtrude an unworthy favorite, Odacer, upon the see of Beauvais, H. boldly remonstrated, and fearlessly denounced the unjustifiable usurpation. H. was probably the most vigorous of French prelates. His works were collected in two vols. folio by Père Sirmond, s. j. (Paris 1645). Several other pieces of his are found in the 8th vol. of Labbe's *Collection of Councils*, and in the 5th vol. of that of Hardouin; as also in Père Cellot's *Concil. Duziac*. (Paris 1658). Many others of his works, still in ms., are enumerated in Wetzter's *Kirchen-Lexicon*, v. 308.

HIND, n. *hind* [Icel. *hind*; Ger. *hindinn*, a hind]: the female of the red deer, of which the male is the stag; sometimes, the female of other species of deer, though never of any other European species; sometimes extended even to female antelopes. In strict ancient usage, Hind was not applied to the female red deer till the third year of its age. **HINDBERRY** [Ger. *him-beere*, the raspberry]: in *OE.*, the raspberry, named probably after the female deer.

HIND, n. *hind* [AS. *hina*, a domestic: Sw. *hjun*, the member of a family: Icel. *hion*, a family]: a servant; a husbandman; a peasant.—**SYN.** of 'hind': peasant; rustic; swain; countryman; boor; domestic; attendant.

HIND, a. *hind* [AS. *hindan*; Ger. *hinter*, behind: Fin. *hanta*, the tail; *hannassa*, behind]: pertaining to the tail or back part, pertaining to the part which follows, in opposition to *fore*, as hind legs: compar. **HINDER**, *hind'er*, in a position contrary to that of the head or forepart: superl. **HIND'MOST**, *-mōst*, or **HIND'ERMOST**, the last; being in the rear of all others. *Note.*—The forms in *most*, as 'hindmost, aftermost, utmost, etc., contain a double comparison, arising from a popular etymology changing *est* into *ost*, due to confusion with the word *most*; the correct superlatives are 'hindest, aftest, and uttest.'

HIND, *hind*, **JOHN RUSSELL**: English astronomer: b. Nottingham, 1823, May 12. He early became an enthusiast in the study of astronomy, and in 1840 obtained, through the influence of Prof. Wheatstone, a situation in the Royal Observatory at Greenwich, where he remained till 1844, June. H. was then sent as one of the commission appointed to determine the exact longitude of Valentia, and on his return was appointed to a post in Mr. Bishop's Observatory, Regent's Park, London. Here he made those observations, the results of which have rendered his name renowned in the scientific world. He calculated the orbits and declination of more than 70 planets and comets, noted

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16 new movable stars, and three nebulæ, and discovered 10 new planets, viz., Iris and Flora, 1847; Victoria, 1850; Irene, 1851; Melpomene, Fortuna, Calliope, and Thalia, 1852; Euterpe, 1853; Urania, 1854. In 1851, H. obtained from the Acad. of Sciences, Paris, the Lalande Medal, and was elected a corresponding member. In 1852, he obtained the gold medal of the Astronomical Soc. of London, and a pension of £200 a year from the British government. He superintends the publication of the *Nautical Almanac*. H.'s scientific papers have generally been published in the *Transactions of the Astronomical Soc.*, in the *Comptes Rendus* of Paris, and the *Astronomische Nachrichten* of Altona. H.'s popular works are—*Recent Comets and the Elements of their Orbits* (*Athenæum*, 1845, Aug. 9); *Astronomical Vocabulary* (16mo, 1852); *The Comets* (12mo, 1852); *The Solar System* (8vo, 1852); *Illustrated London Astronomy* (8vo, 1853). *Elements of Algebra* (Lond. 1855); *Descriptive Treatise on Comets* (1857), etc. He d. 1896, Dec. 22.

HINDER, v. *hîn'dër* [AS. *hindrian*, to hinder—from *hinder*, behind, after: Icel. *hindra*, to hinder]: to put or keep back; to retard progress; to delay; to raise obstacles. **HIN'DERING**, imp.: **ADJ.** delaying; obstructive. **HIN'DERED**, pp. *-dërd*. **HIN'DERER**, *-dër-ër*, n. one who. **HIN'DERANCE**, n. *-dër-äns*, or **HIN'DRANCE**, n. *-dräns*, that which stops progress or advance; impediment.—**SYN.** of 'hinder': to stop; check; restrain; impede; interrupt; counteract; thwart; oppose; obstruct; debar; arrest; embarrass; clog; encumber; fetter; prevent; shackle; prohibit; exclude; forbid; preclude.

HINDI, n. *hîn'dē* [native name, a Hindu, the language so called, from *Hind*, India]: language spoken in the valley of the Ganges and its tributaries, from the watershed of the Jumna, as far down as Rajmahal. It is the legitimate heir of the Sanskrit, and fills that place in the modern Indian system which Sanskrit filled in the old. Under the general head of Hindi are included many dialects. It probably had its origin in the country round Delhi. It is the Indian which most nearly approaches the Hindustanee.

HINDLEY, *hînd'li*: town of Lancashire, England, three m. s.e. from Wigan, with which it is connected by railway, on the Manchester road. Its growth has of late years been rapid. There are numerous coal-works in the vicinity; cotton-spinning and manufacture of cotton goods are extensive. There is a free grammar-school, besides numerous other schools. Pop. (1871) 10,627; (1881) 14,667; (1891) 18,973.

HINDLEY'S-SCREW, *hînd'liz*, a screw cut on a solid whose sides are arcs of the pitch circle of a wheel into which the screw is intended to work; named from its inventor.

HINDU, or **HINDOO**, n. *hîn-dô'* [Hind. *Hindi*, or *Hindawi*, a native of India]: a native of Hindustan. **HIN'DUISM**, n. *-izm*, or **HIN'DOISM**, n. doctrines and rites of the Hindus. **HIN'DUSTAN'EE**, or **HIN'DOOSTAN'I**, n. *-stän'ē*, the language of the Hindus: **ADJ.** pertaining to the Hindus or their language.

HINDU KUSH—HINGE.

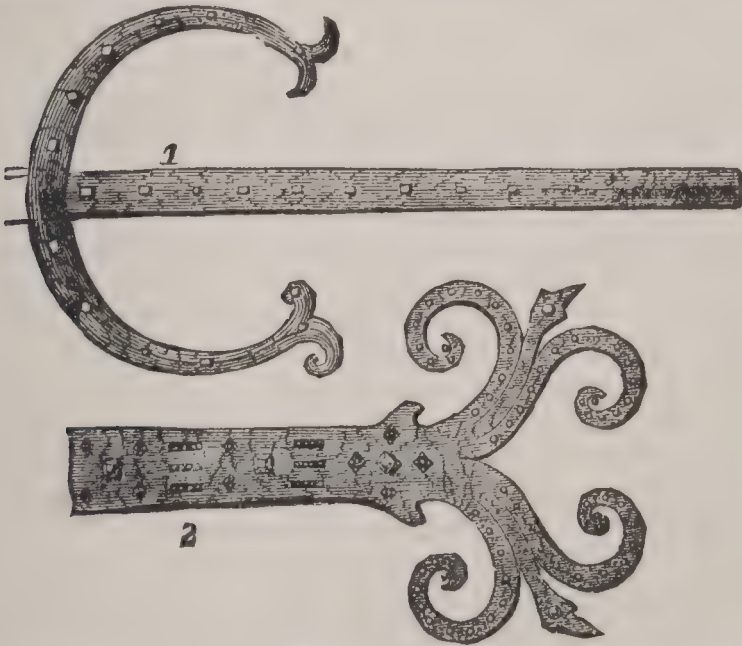
HINDU KUSH, *hĩn'dó kósh*, or **INDIAN CAUCASUS**, *ĩn'-dĩ-an kaw'ka-sūs*: westward continuation of the Himalaya, sometimes, though questionably, reckoned a part of that colossal range. It extends from the Upper Indus on the e. to the Bamian Pass (q.v.) on the w., stretching in n. lat. between 34° and 36°, and in e. long. between 68° and 75°. Separating Afghanistan on the s. from Turkestan on the n. it sends off the Oxus through the latter and the Helmund through the former, to two salt lakes—the Oxus to Aral, the Helmund to Hamûn. The loftiest summit is Hindu Koh, about 80 m. n. of the city of Cabul, estimated more than 20,000 ft. above the sea. Unlike the Himalaya proper, the chain is a water-shed, and is also remarkably destitute of timber; while, like the Himalaya, it presents greater height toward the s. than toward the north.

HIN'DU LAW, RELIGION, etc.: see **INDIA**.

HINDUSTAN, *hĩn-do-stân'* (*Land of the Hindus*): term of the same class as Turkestan, Afghanistan, Farsistan, Beloochistan, or as Frangistan (oriental name of w. Europe): see **INDIA**.

HINGE, n. *hĩnj* [OE. *hing*, to hang: Dut. *henghen*, to hang—from *henghe*, a hook: Icel. *hengja*, to hang]: the hook or joint on which a door, etc., turns or swings; that on which something depends: V. to furnish with hinges; to hang or depend, as a question. **HING'ING**, imp. **HINGED**, pp. *hĩnjd*. **TO BE OFF THE HINGES**, *hĩn'jěz*, to be in a state of disorder or irregularity.

HINGE: pivot, hook, or joint on which doors, shutters., etc., turn or move. The simplest form of H. is a projection cut upon the substance of which the door is made, and



Hinge (copied from Parker's *Glossary of Architecture*):
1, Compton, Berks; 2, Laon cathedral.

fitted into a hole. This is sometimes done with wooden shutters, and there are instances of *stone shutters* hinged in this manner. The cathedral of *Torcello*, near Venice,

HINGHAM—HINT.

which dates from the 11th c., still has the windows protected with shutters of large slabs of stone, hinged on stone pivots. During the middle ages, hinges, as well as every other useful article, were made subjects of ornamentation. The earliest ornamental hinges date from about the 10th c. The first specimens are cramped and stiff, and the scrolls are frequently terminated with animals' heads. In the early English and decorated styles, the hinges and other metal-work were very elaborate and beautiful in design, and frequently extended over the whole door. In the perpendicular style, hinges were usually very simple in form, the panelling of the wood-work not admitting much ornamental iron-work. In modern times, hinges have almost entirely lost their ornamental character. They are made chiefly of brass and iron, and fitted on the edges of doors and shutters, where they are also concealed. 'Double-jointed edge-hinges' are now most in use. The revival of mediæval architecture has, however, given an impulse to the manufacture of ornamental metal-work, and highly ornamental hinges of varied and good design are now generally used in connection with Gothic architecture.

HINGHAM, *hĩng'am*: village in H. tp., Plymouth co., Mass.; on Mass. Bay and the s. shore of the Old Colony railroad; 14 m. s.e. of Boston, with which it has steamboat connection in summer. It contains a high-school, 17 public schools, 8 churches, Derby Acad., public library, 1 national bank (cap. 140,000), 1 savings bank, agricultural soc., several manufactories, and important fishery interests. It commands a fine panorama of Boston harbor and Mass. Bay, and is a popular summer resort. Pop. tp. (1870) 4,422; (1880) 4,485; (1890) 4,564; (1900) 5,059.

HIN'NOM, VALLEY OF: see **GEHENNA**.

HINNY, n. *hĩn'nì* [L. *hinuus*, a mule; *hinnō*, I neigh]: the foal of a horse and a she-ass; a mule: V. to neigh.

HIN'NYING, imp. **HIN NIED**, pp. *-nĩd*.

HINNY, sometimes called **JENNET**: offspring of the horse and the she-ass; very different from and greatly inferior to the mule, which is a hybrid between the ass and the mare (see **MULE**). The voice and bodily form of the H. resemble those of the horse, and like that animal it has a flowing mane and tail. Its disposition is better than that of the mule. It is of rather small size, is deficient in strength and hardiness, and has no specially valuable qualities. It is bred to some extent in Spain and Barbary, but is not in general use in any part of the world.

HINOID, a. *hĩn'oyd* [mod. L. *hinoideus*]: in bot., term used when veins proceed entirely from the midrib of a leaf and are parallel and undivided, as in the *Zingiberaceæ* and the *Musaceæ*.

HINOJOSA-DEL-DUQUE, *ẽ-nō-čhō'sá-dẽl-dô-kā'*: town of Spain, province of Cordova 45 m. n.w. of the city of Cordova.

HINT, n. *hĩnt* [Icel. *ymia*, to whizz; *ymta*, to rumor;

HIOGO—HIOUEN-THSANG.

Dan. xnte, to whisper]: a distant allusion; slight mention or reference: V. to bring to mind by a slight intimation; to suggest; to allude to distantly; to imply. **HINT'ING**, imp. **HINT'ED**, pp. **HINT'INGLY**, ad. *-ly*. To **HINT AT**, to allude to slightly or obscurely.—**SYN.** of 'hint, n.': allusion; notice; insinuation; suggestion; intimation; innuendo; implication; reference; glance; touch.

HIOGO, *hē-ō'gō*, or **HIVOGO**, *hē-gō'gō*, or **FIOGO**, *fē-ō'gō* (including **Kobe**): seaport town of Japan, province of Setsu, on the island of Nipon and the w. shore of Osaka Bay, 40 m. s.w. of Kyoto. It was built in the days of the Taira family, and opened to foreign commerce 1860. Since then its development has been rapid, owing in large measure to its admirable harbor, which is annually visited by about 500 foreign vessels, and has been relieved of its former dangers by the construction of a costly breakwater. The chief anchorage is off the suburb of Kobe. H. exports tea (little to London and the great bulk to New York), silk, copper, camphor, wax, tobacco, ginseng, isinglass, and dried fish; and imports woolen and cotton goods, hardware, machinery, and tools. It is regularly laid out, has wide macadamized streets, is lighted with gas, has a bank and the largest foreign-owned warehouses in Japan, commodious municipal buildings, ship-yard, iron-foundry, paper-pulp factory, and a public ground for out-door sports. Two curious and ancient temples are in vicinity. Entered and cleared, 1901, 1,446 vessels. Pop. (with Kobe, 1890) 215,780.

HIOUEN-THSANG, *yō'ēn-tsang*: celebrated Chinese traveller, professing the Buddhist creed, who visited 110 countries and places of India in the first half of the 7th c. (629-645), and gave a very detailed and interesting account of the condition of Buddhism as it prevailed at that period in India. His inquiries having had reference chiefly to the objects of his veneration, he did not enter so much into details concerning the social and political condition of India as might be desired; but considering the many curious notices he gives on other matters which came under his observation, and the general trustworthiness of his narrative, his memoirs are one of the most important works on the history of India in general, and of Buddhism in particular, during the period stated. Apparently, he travelled alone, or with a few occasional companions; and, as he wore the garb of a religious mendicant, with nothing but a staff, wallet, and waterpot, he does not seem to have been exposed to any dangerous adventures on his journey from China to India. It is surprising, however, that he incurred no impediment on his way home, when he travelled with 500 packages of books, besides images of Buddha and various sacred relics; and his immunity from danger affords a remarkable indication of the civilized condition of the countries which he described. It does not appear that the account of his travels was written by himself, for of the two works relating to them neither is the performance of Hiouen-Thsang. The first is a bibliographical notice of him, in which his travels form a principal feature; it was composed

HIOUEN-THSANG.

by two of his pupils, Hoeï-li and Yen-Thsong. The latter bears the title of *Ta-thang-si-yu-ki*, or 'Memoirs of the Countries of the West, published under the Thang,' and was edited by Pien-ki, since H. himself, who during 17 years had spoken none but foreign languages, had perhaps lost the facility of writing elegant Chinese. According to a remark added to the title of his work in the imperial Chinese edition, it would follow that it had been translated from Sanskrit into Chinese; but this statement, as Prof. Stanislas Julien observes, can mean only that the fundamental part of the work relating to history, legends, etc., was taken from Hindu sources, since it is obvious that the indication of distances and numerous personal observations must have come from H. himself. Both works have been published in French translation by the distinguished Chinese scholar, Stanislas Julien: see *Histoire de la Vie de Hiouen-Thsang* (Paris 1853), and *Mémoires sur les Contrées Occidentales, par Hiouen-Thsang* (2 vols. Paris 1857-8)—works indispensable to the student of Chinese and Sanskrit literature. An abstract of both works, by the late Prof. H. H. Wilson, appeared in the *Journal of the Royal Asiatic Society* vol. XVII 106-137.

HIP.

HIP, n. *hîp* [Ger. *hüfte*; Dut. *heupe*; Icel. *huppr*, the hip, the flank; Norw. *hupp*, the flank]: the projection caused by the haunch-bone and its covering flesh; the upper fleshy part of the thigh (see **HIP-JOINT**): in *arch.*, the external angle formed by the meeting of two sloping sides or skirts of a roof. **HIPPED**, a. *hîpt*, in the sense of beaten; foiled. **HIPPED-ROOF**, *hîpt-rôf*, a roof having the ends and the sides of the same slope. **HIP-KNOB**, ornament carved in stone or wood placed at the point of junction where the sloping sides of a roof meet, or on the summit of a gable or hipped roof, and forming a kind of finial (q.v.). **HIP AND THIGH**, in *Scrip.*, wholly; completely. **HAVE ON THE HIP**, to have a decided advantage over another.

HIP, *hîp*: an int. used on convivial or joyful occasions, in connection with *hurrah*.

HIP, n. *hîp* [Sw. *hjuon*; Dan. *hybe*; AS. *hiop*]: fruit of the rose. It is almost always red, and consists of the enlarged fleshy tube of the calyx filled with hard, seed-like *achænia*, which are surrounded with bristly hairs (*setæ*). The fleshy covering contains mucilage, sugar, gum, malic and citric acids, tannin, resin, and a number of salts. The *setæ* excite itching in the skin. The fleshy part of hips, beaten to a pulp and preserved with sugar, finds a place in the pharmacopœia, under the name of Conserve of Hips (*Conserva Rosæ Fructûs*, *Confectio Rosæ Caninæ*, etc.). It is slightly refrigerant and astringent, and is often used as a vehicle or basis for other medicines. Hips eaten entire are



Hip (*Rosæ Caninæ*):

a, hip opened, showing position of seeds; *b*, a seed.

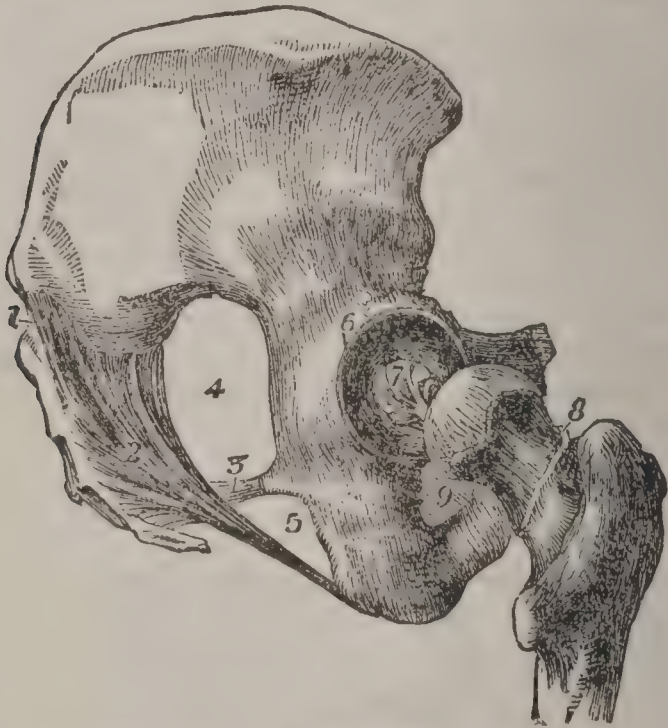
a popular remedy for ascarides, on which their action is purely mechanical, due to the irritating *setæ*. The hips of different species of rose are almost indiscriminately used. In some parts of Europe, hips are preserved in sugar as an

HIP-JOINT.

article of food, or are dried and used in soups and stews, the achænia and setæ being removed. For this purpose, the large soft hips of the Apple Rose (*Rosa pomifera*) are preferred.

HIP-JOINT: ball-and socket joint formed by the reception of the globular head of the thigh bone (or femur) into the deep pit or cup in the *os innominatum*, which is known as the *acetabulum* (from its resemblance to the vinegar cups used by the Romans). If the variety of the movements of this joint—viz., flexion, extension, abduction, adduction, and rotation inward and outward—and at the same time its great strength, are considered, it may be regarded as the most complete joint in the whole body.

In the figure, the surrounding parts are cut away, and



Hip-joint:

1, 2, 3, pelvic ligaments; 4, 5, the greater and lesser sacrospinous foramina; 6, the cotyloid ligament; 7, the round ligament; 8, the cut edge of the lower part of the capsular ligament.

the thigh-bone is drawn out of its socket. The ligaments are usually described as five in number—1. The capsular; 2. The ilio-femoral; 3. The *teres* or round; 4. The cotyloid; 5. The transverse. Of these, the capsular ligament, supposed to be removed in the figure, is the most important, and extends from the edge of the cup to the circumference of the neck upon which the ball is carried, inclosing the bony parts in a strong sheath. The ilio-femoral is merely an accessory band of fibres which give increased thickness to the capsular ligament in front, where strength is specially required. The great use of the capsular ligament is to limit the extension of the hip-joint, and thus to give steadiness to the erect posture. The only other ligament requiring notice is the *L. teres*, or round ligament, which is in reality triangular rather than round, and has its apex attached to the head of the thigh-bone, while its base

HIP-JOINT.

is connected with the cavity of the acetabulum. Its use is not clearly known, but probably is to limit movement in one direction. It is sometimes absent in cases in which no special weakness of the joint was observed during life, and is not of constant occurrence in mammals. The joint is much strengthened by a large number of surrounding muscles, some of considerable power.

In such a joint as this, though the ligaments materially assist in preventing dislocation, it is obvious that the articular surfaces cannot under ordinary circumstances be kept in apposition by them, inasmuch as they must be loose in their whole circumference, to permit of the general movements of the joint. The experiments of Weber show that atmospheric pressure is the real power by which the head of the femur is retained in the acetabulum when the muscles are at rest. 'One convincing experiment is easily repeated—that, namely, of holding up a side of the pelvis, with its appended lower extremity, the joint not having been opened, and then boring a hole through the acetabulum, so as to admit air into the joint, when the weight of the limb will cause it to drop from half an inch to an inch, the head of the thigh-bone being pulled out of the acetabulum as soon as the air is permitted to pass between the articular surfaces.'—Humphry *On the Human Skeleton*, p. 74.

DISEASE OF THE HIP-JOINT. Hip-disease differs in so many points of importance from other joint-diseases, and is so serious an affection, that it requires special notice. Its connection with scrofula is more distinctly marked than that of most other joint-diseases, and it almost always occurs before the age of puberty. It comes on, in children or young persons of a scrofulous constitution, from very slight causes; thus, it is often traced to over-exertion in a long walk, a sprain in jumping, or a fall; and in many cases no apparent cause can be assigned.

In the early stage of the disease, the whole of the structures of the joint are inflamed, and by proper treatment at this period the morbid action may be sometimes subdued without any worse consequences than a more or less rigid joint. Usually, however, abscesses form around the joint, and often communicate with its interior; and the acetabulum, and the head and neck of the thigh-bone, become disintegrated, softened, and gritty. In a still more advanced stage, dislocation of the head of the thigh-bone commonly occurs, either from the capsular ligament becoming more or less destroyed, and the head of the bone being drawn out of its cavity by the action of the surrounding muscles, or from a fungous mass sprouting up from the bottom of the cavity, and pushing the head of the bone before it.

It is of extreme importance that the symptoms should be detected in an early stage of the disease; and on the least suspicion of this joint being affected, surgical aid should at once be sought.

As the disease advances, abscesses (as above mentioned) occur around the joint, which sometimes, from their ten-

HIPPA—HIPPELAPH.

sion on the obturator nerve, occasion extreme pain in the inside of the thigh. True shortening of the limb now takes place, and the limb at the same time becomes adducted and inverted. From this stage, if the health is good and the lungs are sound, the patient may be so fortunate as to recover with an ankylosed (or immovable) hip-joint; but the probability is that exhaustion and hectic will come on, and that death will supervene, from the wasting influence of the purulent discharges occasioned by the diseased bone. The duration of the disease may vary from two or three months to ten or more years. The treatment must be left entirely in the hands of the surgeon. The most important points are *perfect rest* to the affected part, which may be secured by a strong leather splint, or by a starch bandage; internal administration of cod-liver oil and tonics, and counter-irritation by means of an issue behind the great trochanter.

HIPPA, n. *hĭp'pa* [Gr. *hippos*, a horse]: typical genus of the family *Hippidae*, hippians, family of decapod crustaceans, sub-ord. *Anomoura*. The species burrow in the sand. *H. talpoida* is called sand-bug in N. America.

HIPPARCHUS, *hĭp-âr'kŭs*: the first systematic astronomer on record: b., according to Strabo, at Nicæa, in Bithynia. Of the dates of his birth and death, and of his personal history, nothing is known; but his period of activity seems to have been abt. B.C. 160–125. According to Fabricius, H. wrote nine separate works, of which only the last and least important, *A Commentary on Aratus*, has come down to us. The other works treated of astronomy and geography. The only authority that we have regarding the discoveries made by H. is the *Syntaxis* of Ptolemy, from which we learn that H. discovered the 'precession of the equinoxes,' determined the place of the equinox among the stars, established the solar and lunar theories, invented the Astrolabe (q.v.), and drew up a catalogue of more than 1,000 stars, determining the longitude and latitude of each. As Ptolemy also was an astronomer, there is some difficulty in allotting to each his meed of praise for the discoveries mentioned in the *Syntaxis*, which difficulty has given rise to much discussion, resulting in favor of the claims of Hipparchus. See Delambre's *Histoire de l'Astronomie Ancienne* (Paris 1817).

HIPPARION, n. *hĭp-pā'rĭ-ŏn* [Gr. *hipparĭŏn*, a colt, a pony—from *hippos*, a horse]: in *geol.*, extinct tertiary mammal having affinities with the horse; regarded by those who accept the Darwinian hypothesis as a link in the chain of evidence for the evolution of species: see HORSE, FOSSIL.

HIPPELAPH, n. *hĭp'ĕl-ăf* [Gr. *hippos*, horse; *elaphos*, stag, deer]: animal possessing some of the characteristics of the stag and of the horse. It resembles the stag in size and proportions but has rougher and harder hair, and when full grown that of the upper part of the neck is formed into a kind of mane. It has been thought by some to be the *hippelaphus* described by Aristotle. It is a native of Bengal, Sumatra, and the islands of the Indian archipelago.

HIPPIA—HIPPOCAMPUS.

HIPPIA, n. *hĭp'pĭ-a* [Gr. *hippios*, of a horse: so named because horses are fond of the plant]: type of the sub tribe *Hippiæ*, a sub-tribe of *Compositæ*, tribe *Senecionideæ*.

HIPPISH, a. *hĭp'pĭsh*, or **HIPPED**, a. *hĭpt* [corruption of *hypochondriac*]: somewhat hypochondriac.

HIPPO-, prefix, *hĭp'pō-* [Gr. *hippos*, a horse]: in *science*, etc., of, belonging to, or in any way resembling a horse. The prefix is generally *hipp-* before a vowel, as hippelaphus.

HIP'PO, or **HIP'PO RE'GIUS**: see **BONA**.

HIPPOBOSCA, n. *hĭp-po bōs'ka* [Gr. prefix *hippo-*; *boskō*, I feed]: typical genus of the *Hippoboscidae*, forest flies; a family of diptera, sub-ord. *Pupipara*. *H. equina* is the forest-fly, so troublesome to horses.

HIPPOBOSCIDÆ: see **FOREST FLY**; **SPIDER FLY**.

HIPPOCAMP, n. *hĭp'pō-kāmp*, or **HIP'POCAM'PUS**, n. *-kām'pūs*, or **SEA-HORSE** [Gr. *hippos*, a horse; *kamptō*, I bend or curve: L. *hippocampus*]: small fish of singular shape, with head and neck like a horse; in *myth.*, a monster, having the head and fore-quarters of a horse attached to the tail of a fish, said to have served Neptune; in *anat.*, a certain curved structure in the brain. **HIP'POCEN'TAUR**, n. *-sēn'taur* [Gr. *hippos*, and *centaur*, which see]: in *anc. fable*, a creature said to be half man and half horse.

HIPPOCAM'PUS, or **HIP'POCAMP**, or **SEA-HORSE**: genus of osseous fishes, of ord. *Lophobranchii* (q v.), family *Syngnathide* (see **PIPE-FISH**); by some naturalists made the type of a separate family, *Hippocampidae*, remarkably distinguished by the prehensile tail, which is tapering and quite destitute of fin. The species, not very numerous,



Hippocampus Brevirostris.

but of which some are found in the seas of all parts of the world, are fishes of very extraordinary habits and form, with curious suggestion of likeness to a horse. They have the jaws united and tubular, as in the pipe-fishes; the

HIPPOCRAS—HIPPOCRATES.

body compressed, short, and deep; the whole length of the body and tail divided by longitudinal and transverse ridges, with tubercles at their intersections. The scales are ganoid, clothing the whole body in a kind of armor. The males have pouches on the tail in which the eggs are carried till they are hatched. They swim in a vertical position, and are always ready to entwine their tails around seaweeds, or even with one another. They are very interesting in an aquarium.

HIPPOCRAS, or HYPOCRASS, n. *hîp'pō-krās* [after the ancient physician *Hippocrātēs*]: aromatic medicated wine, supposed to have been made first from a recipe by Hippocrates; formerly much used, and still sometimes used in parts of Europe. The following was the method of preparing it: 12 pints of Lisbon were mixed with an equal quantity of canary wine. Bruised spices of various kinds were digested in the wine for three or four days, after which it was strained, and two pounds and a half of lump-sugar were added. It was doubtless good for the purposes of a cordial. HIP'OCRATIC, a. *-krāt'ik*, of or pertaining to Hippocrates. HIPPOCRATIC FACE, denoting pale, sunken, and contracted features in disease, or when dying—as described by Hippocrates. HIPPOCRATIC OATH, formula sometimes attributed to Hippocrates, for the subscription of those about to become physicians, promising good faith to the profession and good conduct.

HIPPOCRATES, *hîp-pōk'ra-tēz*: most celebrated physician of antiquity: b. (according to Soranus) in the island of Cos B. C. 460; d. Larissa, Thessaly, at age variously stated 85 to 109 years; son of Heracleides, who was also a physician, and of the family of the Asclepiadæ—H. being either from the 19th or the 17th in descent from Æsculapius. His mother, whose name was Phænarete, was said to be descended from Hercules. He is said to have been instructed in medicine by his father and by Herodicus, and in philosophy by Gorgias of Leontini, celebrated sophist, and Democritus of Abdera, whose cure from insanity he afterward effected. After travelling through Greece, he settled and practiced his profession at Cos. We know little more of his personal history than that he was highly esteemed as physician and author, and that he raised the medical school of Cos to a very high reputation. H. was the first to discard superstition and to use inductive philosophy as the basis of medical practice. His works were studied and quoted by Plato. Various fabulous stories are recorded of him by Greek writers; also legends in Arabic writers, who term him 'Bokrât,' while the European story-tellers of the middle ages celebrate him under the name of 'Ypocras,' and, in defiance of chronology, make him prof. of medicine at Rome, with a nephew of wondrous medical skill, whom he dispatched in his own stead to the king of Hungary.

The works termed the Hippocratic Collection are more than 60 in number, and, as Dr. Greenhill observes in his article on H. in Smith's *Dictionary of Greek and Roman*

HIPPOCRATES.

Biography, etc., 'the classification of these, and assigning each (as far as possible) to its proper author, constitutes by far the most difficult question connected with ancient medical writers.' Dr. Greenhill divides the Hippocratic Collection into eight classes; of which only two need here be specified (for convenience using the Latin instead of the Greek titles).

Class I.—Works *certainly* written by H., containing *Prognostica*; *Aphorismi*; *De Morbis Popularibus*; *De Ratione Victus in Morbis Acutis*; *De Aëre, Aquis, et Locis*; and *De Capitis Vulneribus*. Some eminent critics doubt the genuineness of some portions of the *Aphorismi*, the work by which H. is most popularly known.

Class II.—Works *perhaps* written by Hippocrates. These are 11 in number; one is the well-known *Jusjurandum*, or 'Hippocratic Oath.'

The others consist of works written before H.; works whose author is conjectured; works by quite unknown authors; and wilful forgeries.

In general, H. divides the causes of disease into two principal classes: the first the influence of seasons, climates, water, situation, etc.; the second, more personal causes, e.g., the food and exercise of the individual patient. His belief in the influence which different climates exert on the human constitution is very strongly expressed. He ascribes to this influence both the conformation of the body and the disposition of the mind, and hence accounts for the differences between the hardy Greek and the Asiatic. The four fluids or humors of the body (blood, phlegm, yellow bile, and black bile) were regarded by him as the primary seats of disease; health was the result of the due combination (or *crasis*) of these, and illness was the consequence of a disturbance of this *crasis*. When a disease was proceeding favorably, these humors underwent a certain change (or *coction*), which was the sign of returning health, as preparing the way for the expulsion of morbid matter, or *crisis*, these crises having a tendency to occur at definite periods, which were hence called 'critical days.' His treatment of diseases was cautious, now termed expectant; it consisted chiefly, often solely, in attention to diet and regimen; and he was sometimes reproached with letting his patients die by doing nothing to keep them alive.

The works of H. were translated at an early period into Arabic. They were printed first in a Latin translation, (Rome 1525). The first Greek ed. (the Aldine) appeared the following year at Venice; an ed. by Mercurialis, 1588, by Foësius, 1595, and by Van der Linden (still much esteemed) 1665. Other editions have appeared under the editorship of Chartier, Kühn, etc. The latest, and incomparably the best ed. is that of Littré, 10 vols., the first of which appeared 1839, the last 1861. An ed. by Ermerins, with Latin translation, is in course of publication at Utrecht at the expense of the Univ. of Amsterdam. The Latin title runs as follows: *Hippocratis et aliorum Medicorum veterum Reliquiæ. Edidit Franciscus Zacharias Ermerius*. The first three vols. appeared 1859-63. An excellent English

HIPPOCRENE--HIPPODROME.

translation of *The Genuine Works of H.* was published 1849, in 2 vols., by Dr. Adams.

HIPPOCRENE, *hĭp-po-krē'nē* [from *hippos*, horse, *krē-nē*, fountain]: fountain on Mount Helicon, about 20 stadia above the grove of the Muses, and, according to the mythical account, was produced by a stroke from the hoof of the horse Pegasus (q.v.). It was sacred to the Muses. In modern times, some have attempted to identify it with a fine spring at Makariotissa; and this opinion is probably correct. See **HELICON**.

HIPPOCREPIFORM, a. *hĭp'pō-krēp'ĭ-fawrm* [Gr. *hippos*, a horse; *krēpis*, a sandal, a shoe; L. *formă*, shape]: in *bot.*, having a horseshoe shape.

HIPPODAME, n. *hĭp'pō-dām* [Gr. *hippos*, a horse; and perhaps OE. *dam*, a marsh]: in *OE.*, a supposed spelling of *hippopotamus*, but more probably it means 'a sea-horse.'

HIPPODAMIA, *hĭp-po-da-mĭ'ă*: in mythology, the beautiful daughter of Œnomaus, King of Pisa, in Elis, and of the Pleiad Asterope. It had been predicted to her father that he should be slain by his future son-in-law; he therefore stipulated that every suitor of his daughter should run a chariot-race with him, and that death should be the consequence of defeat. Thirteen, or, as some say, seventeen, suitors had already been conquered and slain, when Pelops came to Lydia. Pelops bribed Myrtilus, the king's charioteer, and thus succeeded in reaching the goal before Œnomaus, who, in despair, killed himself. H. became wife of Pelops and mother of Atreus and Thyestes. She afterward destroyed herself from grief, at being reproached with having led her sons to murder each other.

HIPPODROME, n. *hĭp'pō-drōm* [Gr. *hippos*, a horse; *dromos*, a running-course]: Greek name for the place set apart for horse and chariot races. Its dimensions were, according to the common opinion, half a mile in length, and one-eighth of a mile in breadth. In construction and all important points of arrangement, it was the counterpart of the Roman Circus (q.v.), with the exception of the arrangement of the chariots at the starting-place. In the H., the chariots were arranged to form two sides of an isosceles triangle, with the apex toward the goal and a little to the right side. But as this would have given the chariots on the left side a longer course than those on the right, the H. was constructed with the right side longer than the other (see figure of **CIRCUS**). The start was effected by setting free the chariots on the extreme right and left, and when they came opposite the next two, by setting them free also, and so on till all were in motion. The H. was also much wider than the Roman circus, to allow for the greater number of chariots, for though we have no precise information as to the number that usually started in one race, we know that Alcibiades on one occasion sent seven; Sophocles mentions ten chariots as competing at the Pythian games; and the number at the Olympic games must have been considerably greater. There is a beautiful description of a chariot-race in Homer (*Iliad*. xxiii. 262-650). The golden

HIPPOGLOSSUS—HIPPOLYTUS.

age of the H. was during the Lower Greek Empire. The Blue and Green factions in the H. carried their animosity into all departments of the public service, and laid the foundation of that perpetual disunion which rendered the Byzantine empire a prey to every aggressor.—The term H. is now sometimes given to a large circus; e.g., to one built at Paris, 1845; also to a large field in the plain of Longchamp, near Boulogne, used as a race-course.

HIPPOGLOSSUS: same as Halibut (q.v.).

HIPPOGRIFF, or HIPPOGRYPH, n. *hîp'pō-grîf* [Gr. *hippos*, a horse; *grups*, a griffin]: fabulous winged animal, half horse and half griffin: it figures largely in the *Orlando Furioso* of Ariosto.

HIPPOLYTUS, *hîp-pōl'î-tûs*: ecclesiastical writer: b. prob. in the latter half of the 2d c.; d. prob. after 235. He is believed to have been Bishop of Portus, the harbor of Rome, opposite Ostia; and was long thought to have suffered martyrdom under Alexander Severus; though the martyrdom is now with much probability reduced to a banishment to Sardinia where he may have died. Prudentius's account of his martyrdom is shown by Döllinger to be almost certainly untenable. There were in the early church many other saints and martyrs of this name.—All the facts connected with the history of this H. have long been the subject of controversy; and the interest of the discussion has been heightened of late years by the discovery of a very curious and important work, certainly of the age of the supposed H., and, if a genuine work of that author, throwing curious light upon the early history of the church. The work in question was one of several Greek mss. obtained at Mount Athos 1842, by M. Menas, agent of the French gov't., and was published 1851, at the expense of the Univ. of Oxford, to which it was recommended as a work of exceeding interest for the history of the early church by Emmanuel Miller, who undertook to edit it. Miller published it as a work of Origen, under the title of *Origenis Philosophumena*. Baron Bunsen was the first to conjecture that the true author was H., but he mistook as to the particular work of H. which he took it to be; and for a time the question of the authorship remained uncertain. Some critics still adhered to the opinion that the author was Origen; some ascribed the work to the Roman priest Caius, others to Tertullian; others to some unknown Novatian heretic. The result of the discussion seems to be, that though Bunsen was wrong in supposing this treatise to be work of H., which Photius had described as a 'little treatise against heresies,' by that author, yet it is in reality a larger treatise on the same subject and by the same author.

There still remained, however, a further question, namely, Who is the H. who is to be regarded as the author? Without reckoning many later saints of that name, Dr. Döllinger, in his *Hippolytus und Kallistus*, enumerates at least six contemporaneous, or nearly contemporaneous, with the supposed H. of Portus. Though certainty has not been reached, the opinion that the author of the *Philosophumena*

HIPPOMANE—HIPPOPATHOLOGY.

was the H. already known in the ancient church as a writer and bishop, has met almost universal acceptance.

From the autobiographical details in the treatise, added to particulars already known, we learn that this H., the time and place of whose birth are uncertain, was, about 218, Bishop of Portus, near Ostia, a suburban see of Rome; and as such, a member of the ecclesiastical council of that city. This fact has decisive confirmation from a statue discovered in Rome 1561, inscribed with the name of H., the title of his see, 'Portuensis,' and the paschal cycle of which H. is known to have been the author. In the persecution of Maximin, 235, H. was exiled to the unhealthy island of Sardinia. Probably from the connection of his see with the church at Rome, H. was active in the affairs of that church, and placed himself in violent opposition to the Bishop Callistus, whom he denounces in the treatise in the most unmeasured terms, both as to his private character and his public administration, as a person of most disreputable antecedents, as well as criminally lax in the government of the church, and especially in the administration of penance, after his election to the see. The tone which he adopts toward the Roman bishop, indeed, is so disrespectful as to appear to the Prot. critics a clear and conclusive evidence that, in the church of the first half of the 3d c., that bishop cannot have possessed the supremacy which the advocates of the papal pretensions ascribe to him. It is difficult, in truth, to conceive any bishop in the modern Roman system addressing the pope in such terms as those which H. applies to Callistus. H. protested against restoring the lapsed to church-fellowship; concerning the Trinity he held to subordinationism against the patripassianism of Roman orthodoxy.

The Rom. Cath. critics reply, with considerable force, that the very violence of the language employed and the unscrupulous nature of the imputations, contain their own refutation; and they contend that no argument can be founded on H.'s opposition to the authority of the Roman bishop, inasmuch as not only the opinions expressed in this very treatise, but also the direct testimony of Prudentius (Hymn xi. v. 170-180), show him to have been tainted with the Novatian heresy, or rather, though somewhat earlier, with the same opinions which in Novatus were condemned as heretical, and which eventuated in the Novatian schism. The validity of this plea, however, is strongly controverted by Bunsen. The works of H., which are numerous, and which comprise dogmatical, exegetical, ascetic, and chronological treatises, were first published in a collected form by Fabricius, Hamburg, 1716-18. They are found also in the second volume of Gallandus. See Bunsen's *Hippolytus and his Age* (1852; 2d ed. 1854); Miller's *Origenis Philosophumena* (Oxford, 1851); Döllinger's *Hippolytus und Kallistus* (Regensburg, 1853); Wordsworth's *St. Hippolytus and the Church of Rome in the Third Century* (Lond. 1853).

HIP'POMANE: see MANCHINEEL.

HIPPOPATHOLOGY, n. *hîp'pō-pă-thôl'ô-jî* [Gr *hippos*,

HIPPOPHAË—HIPPOPHAGI.

a horse, and Eng. *pathology*): the doctrine or description of diseases of horses.

HIPPOPHAË: see SALLOW-THORN.

HIPPOPHAGI, n. plu. *hîp-pŏf ä-jî* [Gr. *phagō*, I eat]: eaters of horse-flesh, according to the accounts of the old geographers, a Scythian people, living n.e. of the Caspian Sea, where now roam the Kalmuck hordes, who, retaining all the peculiarities of the old Scythians, still regard horse-flesh as a dainty. HIPPOPHAGOUS, a *-gŭs*, feeding on horses. HIPPOPHAGY, n. *-pŏf ä-jî*, the practice of eating horse-flesh. The adoption of horse-flesh as food for man has at various times occupied the attention of physicians. That semi-civilized nations eat horse-flesh is well known: witness Sir John Chardin's Account of the Crim-Tartars. In Spain, a banquet, comprising roasted horse-flesh among the viands, was given in the time of Charles V.; and foal's flesh is eaten in some of the hill districts at the present day.

In 1855,6, there was much discussion in Paris relative to the formal introduction of horse-flesh into the meat-markets. Geoffrey St. Hilaire delivered a lecture declaratory of the wholesome character of this food; and some of the more enthusiastic advocates of the plan formed themselves into a so-called Hippophagic Society. The French are famous for their skill in so modifying the operations of cookery as to obtain as many varieties of flavor as possible with any kind of meat; and this skill was exercised in disguising (if not removing) the somewhat coarse taste and odor of horse-flesh. The journals of the time spoke of banquets held by the Hippophagic Soc. in which the principal dishes were horse-flesh, variously cooked and diversified.

In 1866, there was official recognition of the introduction of this food into the market, under such restrictions as were deemed suitable. According to a statement in the *Journal of the Soc. of Arts*, the Prefect of the Seine issued an ordonnance in June of that year, recognizing horse-flesh as human food, establishing special slaughter-houses or abattoirs for it, and laying down detailed regulations. No ordinary horse slaughterers, but only those specially appointed, are to engage in the trade. The animals are to be killed in presence of a veterinary inspector, who is also to stamp or seal every distinct joint of meat after inspection. Unhealthy horses are excluded from the supply; they may be old, and worn out for work, but still healthy (the supply mostly comes from Normandy). All restaurateurs who use horse-flesh in their potages, bouillis, etc., are to acquaint their customers distinctly with the fact. Within a few weeks after the issue of the ordonnance, there were establishments for horse-flesh bouilli and soup, and others for horse-flesh sausages, in Paris, avowedly sanctioned by the authorities. The decision pronounced on the better portion of horse-flesh, by the medical men of Paris, is, that it bears some such relation to ox-beef as brown bread does to wheaten—quite as wholesome, but

HIPPOPODIUM.

not so pleasant in taste. During the French International Exhibition 1867, some of the humbler restaurants of Paris made great use of horse-flesh; so that when, during the siege of Paris 1870-1, horse-flesh was extensively used as food, it was no novelty.

In London, a dinner was given, 1868, to 160 guests at the Langham Hotel, to test the qualities of horse-meat. It was devised by Mr. Bicknell, cooked by M. Castel, and presided over by Mr. Forsyth, q.c. In most of the French dishes the taste of horse was almost hidden by condiments, etc.; but in the 'baron of horse' (weighing 280 lbs.) it was left nearly unchanged—something between beef and venison. The best was done that could be done; but hippophagy has not become any more popular in England than before. In Paris, at the beginning of 1868 there were 20 butchers' shops in which nothing but horse-flesh was sold; and the sale had become considerable, at prices far below that of beef. During the siege of Paris by the Germans, in the later weeks of 1870 and early in 1871, the magnificent Halles Centrales displayed more horse-flesh than any other kind of food. Horse-broth formed the basis of all the soups, even at the most expensive hotels and restaurants. A horse-steak at an ordinary restaurant was charged four francs.

There has been something achieved also in France in feeding poultry with this kind of diet. One establishment was described, 1864 (in the *Journal* above quoted), as covering 30 acres, furnishing accommodation for 100,000 pullets at one time. The horses were slaughtered in abattoirs built for the purpose; the hides, hoofs, heads, marrow, bones, hair, intestines, tendons, and blood were sold to various manufacturers; the flesh was boiled and chopped into small pieces as poultry food; and the refuse was saleable as rich manure.

HIPPOPODIUM, n. *hĭp'pō-pō'dĭ-ŭm* [Gr. *hippos*, a horse; *pous*, or *poda*, a foot]: in *geol.*, a large heavy bivalve characteristic of the lower lias shales of England.

HIPPOPOTAMUS.

HIPPOPOTAMUS, n. *hĭp'pō-pōt'ă-mă's* [Gr. *hippos*, a horse; *pōtāmos*, a river]: genus of artiodactyle ungulate mammals, constituting a family by itself. Till of late, only one species was known as now existing, though the fossil remains of others indicate the greater abundance and wider distribution of the form in earlier periods of the earth's history. The largest and best known species, *H. amphibius*, is—or, within historic periods, has been—found in almost all parts of Africa, to which quarter of the globe it is confined. A smaller species, *H. Liberiensis*, has recently been described as an inhabitant of the rivers of w. Africa within the tropics, and is said to differ remarkably from the common species, and from all the fossil species in having only two incisors, instead of four, in the lower jaw. The common *H.* is one of the largest of existing quadrupeds, the bulk of its body being little inferior to that of the elephant; though its legs are so short that its belly almost touches the ground, and its height is not much above five ft. It is extremely aquatic in its habits, living mostly in lakes or rivers, often in tidal estuaries, where the saltness of the water compels it to resort to springs for the purpose of drinking, and sometimes even in the sea, though it never proceeds to any considerable distance from the shore. Its skin is very thick—on the back and sides, more than two inches; it is dark brown, destitute of hair, and exudes in great abundance from its numerous pores a thickish oily fluid, by which it is kept constantly lubricated. The tail is short. The feet have each four toes, nearly equal in size, and hoofed. The neck is short and thick. The head is very large, with small ears, and small eyes placed high, so that they are easily raised above water, without much of the animal being exposed to view. The muzzle is very large, rounded, and tumid, with large nostrils and great lips concealing the large front teeth. The *H.* cuts grass or corn as if it were done with a scythe, or bites with its strong teeth a stem of considerable thickness neatly through. The skull, while distinguished by remarkable peculiarities, corresponds in the most important characters with that of the hog. The respiration of the *H.* is slow, and thus it is enabled to spend much of its time under water, coming to the surface at intervals to breathe. It swims and dives with great ease, and often walks along the bottom, completely under water. Its food consists chiefly of the plants which grow in shallow waters, and about the margins of lakes and rivers; and it probably renders important service in preventing slow streams from being choked up by the luxuriance of tropical vegetation, the effect of which would be an increase of the extent of swampy land. It often, however, leaves the water, chiefly by night, to feed on the banks, and makes inroads on cultivated fields, devouring and trampling the crops. It is gregarious; and the havoc wrought by a herd of 20 or 30 is very great, so that wherever cultivation extends, war is waged against the *H.*, and it disappears from regions where it formerly abounded. Thus it is no longer found in Lower Egypt, though still abundant further up the Nile.

HIPPOPOTAMUS.

It is taken in pits, which are dug in its usual tracks; it is killed by poisoned spears, is pursued by means of canoes, is harpooned, and is shot with the rifle. The flesh is highly esteemed; the fat, of which there is a thick layer immediately under the skin, is a favorite African delicacy, and when salted, is known at the Cape of Good Hope as *Zee-koe speck*—that is, Lake-cow bacon. The tongue, and the jelly made from the feet, are much prized. The hide is used for a variety of purposes; and the great canine teeth are particularly valuable as ivory, and are a considerable article of African commerce.

The H. is lively and playful in its native waters; it soon learns to avoid man, and when it cannot retire among reeds for concealment, it dives and remains long under water,



Hippopotamus amphibius.

raising only its nose to the surface when another breath becomes necessary. The female H. may sometimes be seen swimming with her young one on her back. The H. is generally inoffensive, but is occasionally roused to fits of rage, in which it becomes extremely dangerous, particularly to those who pursue it in boats. The voice of the H. is loud and harsh, and is likened by Burckhardt to the creaking and groaning of a large wooden door. That the H. is capable of being tamed, and of becoming much attached to man, has been proved by the instances of living specimens in London and Paris. The first H. brought to Europe in modern times, a young one from the Nile, arrived in London 1850. The H. however, sometimes appeared in the spectacles of the ancient Romans. It is generally supposed to be the Behemoth of the book of Job.

Fossil species.—Six species of H. have been described from the later Tertiary strata—the Pleiocene and Pleistocene of Lyell. They occur in fresh-water marls, and in the bone-caves, into which they had been carried for food by the carnivorous animals that used the caves as dens. One fossil species found in England and in considerable

HIPPOSTEOLOGY—HIPPURITES.

abundance in s. Europe, was of a size as much greater than the living species, as its companion, the mammoth, was greater than the living elephant. The abundant remains of the fossil H. in Sicily are deemed to prove that that island, in geologic times, must have been united to Africa.

HIPPOSTEOLOGY, n. *hĭp-pōs-tē-ōl'o-jĭ* [Gr. *hippos*, a horse; *ostēōn*, a bone; *logos*, discourse]: branch of science dealing with the osteology of the horse.

HIPPOTHERIUM, n. *hĭp-pō-thērĭ-ŭm* [Gr. *hippos*, a horse; *thērĭōn*, a wild beast]: in *geol.*, a mammal of the miocene tertiaries, so called from its resemblance to the horse family: see **HIPPARION**.

HIPPURIC, a. *hĭp-pū'rĭk* [Gr. *hippos*, a horse; *ouron*, urine]: applied to an acid obtained from the urine of horses or cows. **HIPPURIA**, n. *hĭp-pū'rĭ-ă*, an excess of hippuric acid in the urine.—*Hippuric acid* is a compound of great interest both to the chemist and to the physiologist. The crystals of hippuric acid are moderately large, colorless but subsequently becoming milk-white, four-sided prisms which are devoid of odor, but have a faintly bitter taste. They dissolve readily in boiling water and in spirit, but are only sparingly soluble in cold water and in ether. Its chemical bearings show that hippuric acid is intimately associated with benzoic acid on the one hand, and with glycine (or glycocoll) on the other. The acid is a product of the metamorphosis of the bodily tissues, especially of herbivorous animals. It is a normal constituent of the urine of the horse, cow, sheep, goat, hare, elephant, etc.; and probably is to be found in the urine of all vegetable feeders. In the human urine of healthy persons living on an ordinary mixed diet, it occurs in very small quantity, but it is increased by an exclusively vegetable diet, and the well-known disease diabetes.

Although hippuric acid usually occurs in mere traces in human urine, it can be artificially produced at will in the body, and thence eliminated in comparatively large quantity by the kidney. If benzoic acid be swallowed, it seems to take up glycine or the elements of glycine in its passage through the system, and thus to form hippuric acid, which appears abundantly in the urine. The hippuric acid occurring in the animal organism exists in combination with bases, and chiefly as hippurate of soda and hippurate of lime. The last-named salt can be obtained by the mere evaporation of the urine of the horse.

HIPPURITES, n. *hĭp-pū-rĭts* [Gr. *hippos*, a horse; *oura*, a tail]: in *geol.*, very remarkable genus of fossil bivalve shells, massive, and of horse-shoe shape, peculiar to the Cretaceous strata, and so abundant in some lower chalk-beds of the Pyrenees and other places, that the series has received, from some continental geologists, the name Hippurite Limestone. The external form of the shell is so anomalous, that the genus has been tossed about by naturalists in an extraordinary manner; some have called it a coral, others an annelid, others a balanus, but the majority class it as a mollusk, differing, however, among themselves

HIPPIUS—HIRING.

whether it is a brachiopod, conchifer, or cephalopod. The true relation of the genus has been lately determined by S. P. Woodward, who has published a full description of its curious and anomalous structure in the *Journal of the Geological Soc.*, XI. 40. He has shown that it is a lamelli-branchiate mollusk. The lower and fixed valve is produced and tapering, in some species reaching a length of more than a foot. On the one side are three furrows, representing the syphonal, muscular, and ligamental inflections of the shell. The upper and free valve formed a flat covering to the large lower valve. Sixteen species have been described. HIP'PURITES, n. in *geol.*, genus of coal-measure plants, so called from their close resemblance to the common HIPPURIS, *híp'pū-ris*, or mare's tale of the marshes.

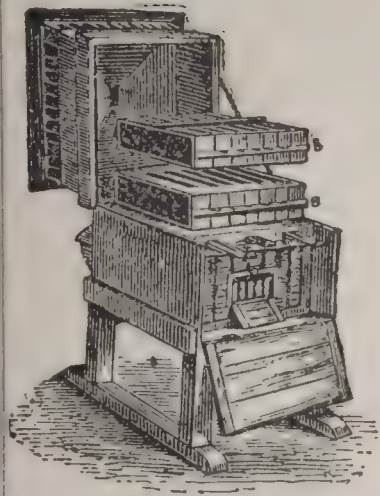
HIPPUS, n. *híp'pūs* [Gr. *hippos*, a horse]: in *path.*, a morbid trembling and twinkling of the eyes.

HIRCINE, n. *her'sin* [L. *hircus*, a he-goat]: a fetid oily matter found in goat's or sheep's fat. HIR'CIC, a. *-sik*, applied to an acid derived from hircine.

HIRE, v. *hīr* [AS. *hyre*; Dut. *huur*; Ger. *heuer*; W. *hur*, wages, payment for service]: to procure the use of, for a certain time, and at a certain price; to engage, as servants; to let out for money: N. the price paid for the loan or temporary use of anything; wages. HIR'ING, imp.: N. an engagement to service (see below): ADJ. applied to a place where engagements to service are entered into. HIRED, pp. *hīrd*. HIRE'LESS, a. without hire. HIR'ER, n. *-rer*, one who hires. HIRE'LING, n. one who serves for wages; a mercenary—used generally in a bad sense.—SYN. of 'hire, n.': salary; stipend; allowance; pay; price; reward; compensation; recompense; payment.

HIREN, n. *hī'rēn*: in *OE.*, a sword; a fighting man or swaggerer; a prostitute. *Note.*—HIREN is said to be (1) a play upon the word *Irēnē*, the Greek goddess of peace, or (2) a play on the word *iron*.

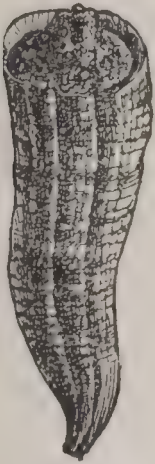
HIR'ING: contract by which one employs, for a limited time, another's property or labor for some compensation. Where the thing hired is land or houses, see LANDLORD AND TENANT. For various other divisions of the subject, see INN: LODGINGS: SERVANTS: CARRIERS: SHIPPING. As to the hiring of task-work or job-work, it is sometimes difficult to establish a contract of this kind, but in general there must be either an express or implied contract to pay for the services. Thus, if A, seeing B's horse running away, at some expense catches it, and brings it back to B, there having been no contract or engagement on B's part to pay, he is not bound to pay A for his services, however beneficial they have been, nor can A keep B's horse till such expenses are paid. So, if B has deposited a chattel with A, who has incurred extraordinary expense in preserving it, B is not bound to pay anything. When a person is hired to do a thing in a given time, and takes much longer, or deviates from the contract, he is nevertheless entitled to be paid for his stipulated services, for the contract is not rescinded on these grounds,



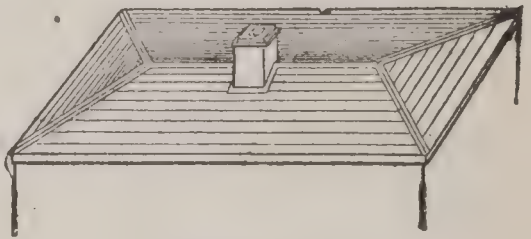
Neighbour's Improved Beehive: B, B, Super-hives.



Hipped-roof.



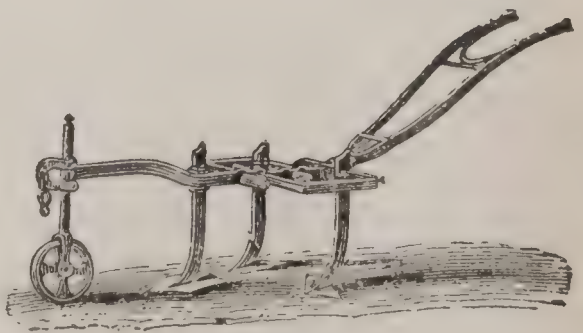
A Hippurite.



Hipped-roof.



Holly (*Ilex Aquifolium*).



Horse-hoe.

HIRPLE

unless there was an express stipulation to that effect. Incompetence, neglect, waste, or loss, by one hired for service, may expose him to loss of wages, and to discharge; though in such cases reference must be had to the expressed or understood terms of the contract. The law differs in different states as to the claim of a person hired and without reasonable cause breaking his contract, to recover wages for service actually rendered. During the progress of the contract, it is sometimes material to know which of the parties bears the loss in case of fire. It is difficult to lay down the rule in such cases, for everything depends on the nature of the contract. Whoever is the owner, in law, of the material at the time bears the loss of it by an accidental fire. If, for example, a tailor engage to make a coat and to furnish the materials for a fixed sum, this is, in fact, two contracts—viz, a sale of the materials, and also labor and work bestowed on them; and in case of destruction of the subject before completion, the loss of the material falls on the hirer, and the loss of the labor falls on the workman. So if a printer engaged for a fixed sum per sheet to print and complete a book, the hirer would bear the accidental loss of the paper, and the printer the loss of his labor and skill. Much, however, depends in all these cases on the terms of the contract. Where a workman engages to do useful work, he impliedly warrants to have reasonable skill; otherwise, if the work be useless, he cannot recover his money. In the case of robbery while goods are in the hands of a workmen, if the robbery resulted from his negligence, he bears the loss: so if he merely lost it. In case of a horse or chattel being hired, the hirer is bound to use all reasonable care for its preservation.

HIRPLE, v. *hèrp'l*: in *Scot.*, to halt, as from lameness; to limp; to move crazily. HIRP'LING, imp. HIRPLED, pp. *hèrp'ld*.

HIRSCH—HIRSUTE.

HIRSCH (DE GEREUTH), Baron MAURICE DE: 1831-1896, Apr. 20; b. Munich, Bavaria: Jewish financier and philanthropist. He was sent by his father, the first baron (ennobled 1869) to Brussels at the age of 13; at 17 he left school and went into business. He married Mlle. Bischoffsheim, daughter of a wealthy Belgian senator. At the failure of the firm of Dumonceau, H. secured the most valuable of their assets, including the right to construct the Turkish railways. In this work of railway construction he was so successful that he eventually became one of the richest men in the world, leaving at his death, after all his benefactions, a fortune estimated at \$200,000,000. The death of his only son led him to devote \$20,000,000 in the son's behalf wholly to charities, especially for the Hebrews of Russia, Hungary, Galicia, and Roumania. On the expulsion of the Jews from Russia H. devised a scheme of colonization to which he guaranteed \$10,000,000. Nearly 500,000 acres of land were secured in the Argentine Republic, on which more than 1,200 families have been settled, of whom a large proportion have become independent of charitable aid. He also established (1891) in the United States the **HIRSCH FUND** amounting to about \$2,500,000 for assisting needy Hebrew immigrants, especially in the way of furnishing tools and teaching simple trades. A number of colonies have been established by this fund, especially that at Harrison, N. J. Classes in mechanical training are also conducted in New York on the interest of the fund, estimated at \$10,000 a month. His other benefactions were very numerous and extensive, estimated at \$15,000,000 in a single year. In all his gifts aggregated \$50,000,000, and his wife, since his death, has continued his benefactions.

HIRSCHBERG, *hērsh'bērch*: important manufacturing town of Prussia, Province of Silesia, romantically situated at the foot of a mountain, and at the confluence of two streams, the Bober and the Zacken, 30 m. s. w. of Liegnitz. The town is ancient, and is still girt about by a double line of walls. Its Prot. Church, a Gothic edifice, is worthy of mention for its beauty, its magnitude, and its excellent organ. H. is the centre of the extensive linen and other manufactures of the district. Pop. (1880) 14,388; (1890) 16,214.

HIRSEL, n. *hērs'l*, or **HIRDSEL**, n. *herd sɪ* {Scot.: old Swed. *haer*, an army; *saella*, to assemble}: in *Scot.*, a multitude; a throng; a flock of sheep: V. to class into different flocks; to dispose in order. **HIRSELLING**, imp. **HIRSELLED**, pp. *hērs'ld*.

HIRSIL, or **HIRSLE**, v. *hērs'l* [AS. *hirstlan*; Teut. *aer-selen*, to move or creep while sitting on the buttocks]: in *prov. Eng.* and *Scot.*, to move resting on the hams or while sitting; to fidget: N. the act of moving in a creeping manner when sitting or reclining. **HIRSILLING**, imp. **HIRSILLED**, pp. *hērs'ld*.

HIRSUTE, a. *hēr-sūt'* [L. *hirsūtus*, rough, hairy]: cov-

HIRUDINEA—HISPANIA.

ered with long stiffish hairs thickly set; hairy. **HIRSUTE'** **NESS**, n. -*něs*, hairiness.

HIRUDINEA, n. *hĭr' ŭ-ďĭn' ě-ă* [L. *hirūdo*, or *hirūdĭnem*, a leech, a blood-sucker]: in *zool.*, the ord. of annelida including the leeches.

HIS, *hĭz*: pers. pron. poss. of **HE**, which see.

HISCOCK, *hĭs' kok*, **FRANK**: lawyer: b. Pompey, N. Y., 1834, Sep. 6. He received an academical education, was admitted to the bar 1855, began practice in Tully, Onondaga co., N. Y.: was dist.attor. of the county 1860-63, member of state constitutional convention 1867, member of congress (republican) 1879-86, and elected U. S. senator for the term 1887-93. As representative he was chairman of the committee on appropriations, and as senator he was chairman of the committee on the centennial of the constitution, and is a member of the committees on coast defenses, finance, interstate commerce, and patents.

HISPANIA, *hĭs-pă'nĭ-a*: name by which Spain was known to the Romans. According to W. von Humboldt, it is only a modified form of the original name, which he derives from *Ezpaña*, a Basque word, meaning a 'border' or 'limit,' and which he understands to imply that the country formed the margin of Europe toward the Western Ocean. Of the other ancient names of the country, the chief are *Iberia*—the common designation among the Greeks and believed to denote specially the region of the Iberus (modern Ebro)—and *Hesperia*, on account of its western situation.

Little definite or accurate knowledge of H. was possessed before the time of the Romans. The conquests of the Carthaginians first excited the alarm of the Romans, and led to the struggle on Spanish soil of these two great rivals. After the complete triumph of the Romans, these indefatigable conquerors set themselves for two or three centuries to the thorough subjugation of the whole country. This was finally effected in the time of Augustus, who also founded many Roman cities, adorned with splendid architecture, such as Cæsar Augusta (*Zaragoza*), Emerita Augusta (*Merida*), Pax Julia (*Beja*), Pax Augusta (*Badajoz*), Legio VII. Gemina (*Leon*), etc., and completed the system of military roads across the peninsula, begun B.C. 124. Great numbers of Romans then flocked into the country, and settling there, mixed with the native Iberi, some of whom completely adopted Roman habits, and were spoken of as *Togati*.

To what stock of the human family the old Iberi of H. belonged, is one of the *quæstiones vexatæ* of scientific ethnography. That they are now represented by the Basques (q.v.) is universally admitted. Niebuhr holds that H. was originally peopled by Celts and Iberi, from a mixture of whom arose the *Celtiberi* (q.v.). The more common opinion, however, both ancient and modern, is, that the Celts were not equally aboriginal with the Iberi, but invaders from Gaul, who conquered the latter.

HISPANIOLA—HISTOLOGY.

HISPANIO'LA [Little Spain]: see **DOMINGO, SAN HAYTI**.

HISPID, a. *hîs'pîd* [L. *hispidus*, bristly, rugged: F. *his-pide*]: rough; having strong hairs or bristles.

HISS, n. *hîs* [an imitative word: Piedm. *issé*, or *sissé*, to hiss on a dog: W. *hust*, a low buzzing noise: It. *zitto*, a slight sound: Dan. *tys*, hush; *tysse*, to hush]: an expression of contempt or disapprobation like the continuous sound of the letter *s*, produced by driving breath between the tongue and the teeth; the noise made by a serpent or goose, or by escaping steam: V. to express contempt by hisses; to condemn by hissing. **HISS'ING**, imp.: N. the act or expression of. **HISSED**, pp. *hîst*. **HISS'INGLY**, ad. *-lî*. **HIST**, int. *hîst*, hush; silence.

HISSAR, *hîs-sâr'*: capital of a dist. of that name in the Punjab, about 100 m. n.w. of Delhi. Pop. (1868) 14,133. —The district of **HISSAR'**, belonging to a division of the same name, is on the w. border of the great desert of Bikaner: it has 3,540 sq. m., and its fertile soil produces wheat and other cereals in abundance. Pop. 504,183. —The British division of **HISSAR** has 8,478 sq. m.; pop. (1868) 1,232,435; (1881) 1,311,067.

HISTIOID, a. *hîs'tî-oyd* [Gr. *histos*, a web, a tissue; *eidos*, resemblance]: in *anat.*, tissue-like.

HISTOGENESIS, n. *hîs-tô-jên'ê-sîs*, or **HISTOG'ENY**, n. *-tôj'ê-nî* [Gr. *histos*, a tissue, a web; *gennâō*, I produce]: the microscopic study of tissues in animals or plants; the formation and development of organic tissues. **HISTOGENETIC**, a. *hîs-tô-jê-nêt'îk*, promoting the formation of organic tissues; in *bot.*, applied to minute molecules supposed to be concerned in the formation of cells.

HISTOID, a. *hîs'toyd* [Gr. *histos*, tissue; *eidos*, form]: term applied to tumors whose contents closely resemble the normal texture of the body.

HISTOLOGY, n. *hîs-tôl'ô-jî* [Gr. *histos*, a tissue; *logos*, a discourse]: the science of the animal tissues; the description of the tissues which form an animal or plant. **HIS-TOLOG'ICAL**, a. *-lîj'ô-kâl*, relating to histology or the description of tissues. —*Histology* is the science which classifies and describes the structural or morphological elements in the solids and fluids of organized bodies. It is identical or nearly so with general minute anatomy and with microscopic anatomy. Although its origin may be traced to the times of Malpighi (1628–94), who discovered the blood corpuscles, and of Leeuwenhoek (1632–1723), who, with comparatively imperfect optical means, added much to the knowledge of the minute structure of the tissues, it never made any definite progress till the second decennium of the present century, when the compound microscope began to assume its present improved form. It was by this microscopico-chemical examination that the structure of the different horny tissues was first clearly exhibited, and it was thus proved that nails, cow's horn, and whalebone are similarly composed of aggregations of individual

HISTOLYSIS—HIT.

cells. Again, in the investigation of the nervous tissue, and of many other structures, chemistry and the microscope have been most usefully combined.

During the last quarter of a century, no department of medical science has made such rapid progress as histology. In Germany, it has been successfully cultivated by Schwann, Hewle, Valentin, Remak, Kölliker, Virchow, Leydig, Frey, and a host of others, scarcely less distinguished; in Holland, it has been actively prosecuted by Donders, Harting, and others; Lebert, Mandl, Robin, and others, have contributed to the French literature of the subject; while of Englishmen, the names of Todd and Bowman, of Goodsir, Quekett, Bennett, Sharpey, Clarke, Wharton Jones, Beale, and Huxley, deserve honorable notices.—See CELL-THEORY; TISSUES.

HISTOLYSIS, n. *hîs-tôl'î-sîs* [Gr. *histos*, a web or tissue; *lusis*, a solution—from *lûō*, I dissolve]: the disintegration of previously organized structures. **HISTOLYTIC**, a. *hîs-tô-lî't'îk*, derived from the disintegration of previously organized structures; of the nature of histolysis.

HISTORY, n. *hîs'tô-rî* [Gr. and L. *histōriā*, history: F. *histoire*]: a systematic account of facts and events, particularly those affecting nations or states; a narration of past events. **HISTO'RIAN**, n. *-tô'rî-ăn*, one who writes history. **HISTOR'ICAL**, a. *-tôr'î-kāl*, or **HISTOR'IC**, a. *-îk*, pertaining to history; contained in history or deduced from it. **HISTOR'ICALLY**, ad. *-kāl-lî*. **HISTORIETTE**, a. *hîs-tô'rî-êt'* [F. a story]: a short or little history. **HISTORIFY**, v. *hîs-tôr'î-fî* [L. *făcĭō*, I make]: in *OE.*, to record or reduce to history. **HISTOR'IFYING**, imp. **HISTOR'IFIED**, pp. *-fîd*. **HIS'TORIOG'RAPHY**, n. *-tô-rî-ôg'ră-fî* [Gr. *graphō*, I write]: the art or employment of writing history. **HIS'TORIOG'RAPHER**, n. *-ră-fēr*, one who; a person appointed by a sovereign to write the history of his kingdom. **SACRED HISTORY**, the history of religion and the events connected with it, as contained in the Scriptures. **PROFANE HISTORY**, the history of nations in general, called also **CIVIL HISTORY**. **ANCIENT HISTORY**, the history of the nations of antiquity down to the destruction of the Western Empire, 476 A.D. **HISTORY OF THE MIDDLE AGES**, extends from 476 A.D. to end of 15th century. **MODERN HISTORY**, from about 1492 A.D. to our own times. **CLASSICAL HISTORY**, the history of the Greeks and Romans. **NATURAL HISTORY**, a description and classification of the mineral, vegetable, and animal productions of the earth—sometimes limited to animals only.—**SYN.** of 'history': annals; chronicles; a relation; narration; description; narrative; account; record; story.

HISTRIONIC, a. *hîs'trî-ôn'îk*, or **HIS'TRION'ICAL**, a. *-î-kāl* [L. *histrĭōnicus*, pertaining to stage-playing—from *histrĭōnem*, an actor or stage-player: F. *histrion*]: of or relating to the stage or stage players; befitting the stage. **HIS'TRION'ICALLY**, ad. *-lî*. **HISTRIONIC ART**, the art of acting in the drama. **HIS'TRIONISM**, n. *-îzm*, stage-playing.

HIT, v. *hît* [Icel. *hitla*, to light on: Bav. *hutzen*, to

HIT—HITCHCOCK.

strike: Dan. *hitte*, to hit upon]; to touch or strike with or without force; to touch, as a mark; to succeed; to chance luckily; to light on; in *OE.*, to agree; to suit: N. a stroke; a chance; a lucky chance; a happy conception. **HIT'ING**, imp. **HIT**, *hit*, pt. and pp. **HIT'TER**, n. *-ér*, one who. **To HIT OFF**, to describe by characteristic strokes. **To HIT ON or UPON**, to light upon, or come to, by chance. **A GREAT HIT**, an exceptional piece of good luck; a perfect success.

HIT, *hit* (anc. *Is*): town of Turkey in Asia, on the Euphrates, 90 m. w.n.w. of Bagdad. It has about 1,500 houses, and is remarkable for the fountains or pits of bitumen near it.

HITCH, n. *hích* [Bav. *hutschen*, to rock, to hitch one's self: Dut. *hutsen*, to shake, to jumble]: a catch, or anything which acts as one; a knot or noose in a rope (see **KNOT**): a sudden stop or halt; an impediment: V. to hook, or catch by a hook; to catch; to move by jerks. **HITCH'ING**, imp. **HITCHED**, pp. *hícht*.

HITCHCOCK, *hích'kók*, EDWARD, D.D., LL.D.: 1793, May 24—1864, Feb. 27; b. Deerfield, Mass.: Congl. minister, educator, and geologist. He educated himself while working on a farm; was principal of the Deerfield Acad., and made astronomical calculations, and published the *Country Almanac* 1815–18; graduated at Yale Theol. Seminary 1820; was pastor of the Congl. Church, Conway, Mass., 1821–25, at the same time making a geological survey of w. Mass. and studying chemistry; prof. of chemistry and natural history at Amherst College 1825–45; state geologist of Mass. 1830–44; pres. of Amherst College and prof. of natural theol. and geology 1845–54; state geologist of Vt. 1857–61; and held numerous other scientific appointments. He was a founder and first pres. of the Amer. Assoc. of Geologists and Naturalists 1840; an original member of the National Acad. of Sciences 1863; founder of the H. Ichnological Museum of Amherst College; a founder of the Mount Holyoke Seminary, and of the Mass. Agricultural College; and for many years a member of the Mass. Board of Agriculture. His character was notable for modesty, simplicity, and fidelity. He was a prolific author and frequent contributor to scientific and other periodicals, publishing among other works: *The Downfall of Bonaparte* (1815); *Economic Geology* (1832); *Report on the Geology, Mineralogy, Botany, and Zoology of Massachusetts* (1833); *Re-examination of the Economical Geology of Massachusetts* (1838); *Geology of Massachusetts* (1841), *Ichnology of New England* (1858), a supplement thereto, posthumous (1865), *Report on the Geology of Vermont, Theoretical, Economical, and Scenographical*, 2 vols. (1861), *Dyspepsia Forestalled and Resisted* (1830), *Elementary Geology* (1840), *Religious Lectures on Peculiar Phenomena of the Four Seasons* (1850), *Religion of Geology and its Connected Sciences* (1851), *The Power of Christian Benevolence illustrated in the Life and Labors of Mary Lyon* (1852), *Religious Truth illustrated from Science* (1857), and *Reminiscences of Amherst College* (1863). He received the degree D.D. from Middlebury College 1846, and LL.D. from Harvard Univ. 1840.

HITCHCOCK—HITCHIN.

HITCHCOCK, *hĭch'kŏk*, **ETHAN ALLEN**: 1798, May 18—1870, Aug. 5; b. Vergennes, Vt.: soldier. He graduated at the U. S. Milit. Acad. 1817, became capt. 1824, was asst. instructor of milit. cadets at the acad. 1824-27, commandant of cadets there 1829-33, served through the Seminole Indian and Mexican wars, was inspector-gen. on Gen. Scott's staff, was brevetted col. for Contreras and Churubusco, and brig.gen. for Molino del Rey, promoted col. 2d U. S. inf. 1851, resigned his commission and engaged in literary pursuits 1855; was appointed maj.gen. of vols. 1862, Feb.; served as commissioner for the exchange of prisoners of war and commissary-gen. of prisoners, and was retired 1867, Oct.

HITCHCOCK, **ETHAN ALLEN**: an American diplomatist; b. 1835; engaged in mercantile business in St. Louis till 1860, when he went to China to enter a commission house; returned to the United States in 1874; was appointed U. S. minister to Russia. In the following year he became Ambassador; and in 1899 Secretary of the Interior.

HITCHCOCK, **ROSWELL DWIGHT**, D.D., LL.D.: 1817, Aug. 15—1887, June 16; b. E. Machias, Me.: educator. He graduated at Amherst College 1836, taught school a year, entered Andover Theol. Seminary 1838, was tutor at Amherst College 1839-42, resident licentiate at Andover 1842-44, and was installed pastor of the 1st Congl. Church at Waterville, Me., 1845, Nov. 19. He spent 1847-8 studying in the universities of Halle and Berlin, became Collins prof. of natural and revealed religion in Bowdoin College 1852, and Washburn prof. of church history in Union Theol. Seminary (Presb.) in New York 1855. In 1866 he visited Italy and Greece, and 1869-70 Egypt, Sinai, and Palestine; 1871 was elected pres. of the American Palestine Exploration Soc.; and 1880 pres. of Union Theol. Seminary, and vice-pres. of the American Geographical Soc. He was one of the editors of the *American Theological Review* 1863-70. H. published *Life of Edward Robinson* (1863), *Complete Analysis of the Bible* (1869); *Socialism* (1878); edited with Rev. Drs. Eddy and Schaff *Hymns and Songs of Praise* (1874), and *Hymns and Songs for Social and Sabbath Worship* (1875); and translated with Rev. Dr. Francis Brown *The Teaching of the Twelve Apostles* (1884-5).

HITCHIN, *hĭch'in*: town of Hertfordshire, England, 14 m. n.w. from Hertford, on the Hiz, a branch of the Ivel, and feeder of the Ouse, 420 ft. above the sea. It is a station on the Great Northern railway, and from it important lines of railway branch off to Bedford and other places on the n.w., and to Cambridge, etc., on the n.e. The town is irregularly laid out, but generally well built, with spacious streets. The principal trade is in corn, malt, and flour. There are several large breweries. Many women are employed in straw-plaiting. There are lavender farms in the neighborhood. H. was a place of some consequence in the days of King Alfred. Pop. (1891) 8,860.

• HITHER—HITZIG.

HITHER, ad. *hīth'ēr* [AS. *hider*, or *hither*; Icel. *hedra*; Dan. *hid*; Goth. *hidre*, *hither*]: to this place: **ADJ.** nearer. **HITH'ERMOST**, a. -*mōst*, nearest on this side. **HITH'ERTO**, ad. -*tō*, to this time or place; in any time before the present. **HITH'ERWARD**, ad. -*wērd*, or **HITH'ERWARDS**, ad. -*werdz*, toward this place. **HITHER AND THITHER**, in several directions; backward and forward.

HITOPADE'SA [literally, 'good advice,' or 'salutary instruction,' from the Sanskrit *hita*, good, salutary; and *upadesa*, advice, instruction]: name of the celebrated Sanskrit collection of fables, the contents of which have passed into almost all the civilized literatures of the earth. The collection itself, in the form in which we possess it, is founded on older works of a kindred nature, and is classed by the Hindus among their ethical works. See **SANSKRIT LITERATURE**.

HITTEREN, *hīt'tēr-én*: island of the w. coast of Norway, about 30 m. long. Pop. 3,700.

HITTITES, *hīt'tits*: English name of the people called in the Old Testament *Khittim*, a Canaanitish people conquered by the Israelites, spoken of as the children of Heth, who was one of the sons of Canaan. The Palestinian H. are usually assumed to have been a branch of the powerful and warlike nation called in Egyptian *Khita*, and in the Assyrian inscriptions *Khatti*, the centre of whose dominion lay in the regions between the Orontes and the Euphrates. This people, apparently of non-Semitic stock, long held their ground against the Assyrians, and were at one time the most formidable rivals of the Egyptians, but were ultimately (about B.C. 1340) conquered by the latter power. They seem to have sent armies into Asia Minor, and to have left their traces even on the shores of the Ægean Sea, and to have stamped their influence on Babylonian and Assyrian art. The Hittite empire at its height of power doubtless extended from Carchemish, its capital on the Euphrates, to the central plateau of Asia Minor. Its decline corresponded to the rise of the Assyrian power. It has been held that the Hamathite inscriptions in the s. w. of Asia Minor are their work; and that the Cypriote syllabary is derived from the same source. The Hittite capital was Carchemish (modern Jerablûs): their chief southern city, Kadesh on the Orontes, was identified 1881 by the help of the Egyptian records.

HITZIG, *hīt'sīch*, **FERDINAND**: German biblical scholar: 1807, June 23—1875, Jan. 22; b. Hauingen, Baden. He was educated at Heidelberg, Halle—where the influence of Gesenius determined him in favor of Old Testament studies—and at Göttingen. In 1833, he was called to Zürich as prof. of theology, with a special view to the exegesis of the Old Testament; but his lectures embraced also the New Testament, and the languages of the East, especially the Semitic. In 1861, H. returned as prof. to Heidelberg, where he died. His abilities as a philologist were very great, and he had much sagacity in criticism; but as a commentator he had some grave defects. The first work

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which established his fame was his *Uebersetzung u. Auslegung d. Proph. Jesaias* (1833), Besides a translation of the Psalms, with a commentary (1835-6), he furnished for the *Exegetisches Handbuch zum A. T.* the commentaries on the 12 minor prophets (1838; 2d ed. 1851), on Jeremiah (1841), Ezekiel (1847), Ecclesiastes (1847), Daniel (1850), and the Song of Solomon (1855), with a translation of all the prophetic books as a supplement (1854). He is known also by *Die Erfindung d. Alphabets* (1840), *Die Grabchrift d. Darius zu Naschki-Rustam* (1845), *Urgesch. u. Mythologie d. Philistier* (1846), etc., and by considerable contributions to periodicals.

HIVE, n. *hīv* [Goth. *heiv*; Icel. *hiu*, family. household: AS. *hige*, a household]: a kind of box or basket in which the domestic bees store their honey; a swarm of bees; any company of persons numerous and industrious: V. to collect into a hive; to take shelter together; to reside together. **HIVING**, imp. **HIVED**, pp. *hīvd*. **HIVER**, n. one who. **HIVE-NESTS**, in *ornith.*, nests constructed by birds living in vast societies under one common roof. They are found only in Africa; the most remarkable being the work of the Republican Grosbeak (*Philæterus socius*), the nests of which are constructed in such numbers in trees that the latter often break down with the weight.

HIVES, n. plu. *hīvz* [see **HIVE**]: in *Scot.* and *N. of Eng.*, a skin disease among children, consisting of vesicles scattered over the body, which bear a fancied resemblance to a *beehive*; the croup.

HIVITES, *hī'vīts* ['Midlanders' according to Ewald, or 'Villagers' according to Gesenius]: Canaanitish people, who in the time of Jacob occupied the uplands of Ephraim, and later, the slopes of Hermon and the region w. toward Tyre.

HIZEN, *hē-zēn'*: province in Kiushin, Japan; notable for porcelain manufactures, mostly at Arita. Nagaski and Saga are large cities in this province.

HIZZ. **HIZZING**, *hīz*: OE. spelling of **HISS**, **HISSING**.

H'LAS'SA: capital of Tibet, on the Dzangtsu, lat. 29° 39' n., long. 91° e.; 11,910 ft. above sea-level. It is noted for the convents in and near it, composing the ecclesiastical establishments of the Dalai-lama, whose personal residence is in a convent on the adjacent Mount Botala. H. is to Buddhism what Rome is to Rom. Catholicism; it is the headquarters of the hierarchy of lamas, who, by means of the Dalai-lama, exercise priestly control over nearly all Mongolia, as well as Tibet. The city lies in a fertile plain, which extends about 7 m. n. to s., and about 13 m. in length. Mountains and hills encircle it. A Chinese garrison is quartered near Mount Botala, where the temples are resplendent with gold and precious stones. Manning (1811-2), and Huc and Gabet (1846), are the only Europeans who have visited H. in the 19th c. Pop. 40,000 to 80,000.

HO, or **HOA**, int. *hō* [F. *ho*, an int. to impose silence or stop an action: Icel. *hóa*, to shout out ho!]: hold! stop! used to excite attention.

HOACTZIN—HOADLEY.

HOACTZIN, *hō'ākt-zīn*, or HOAZIN, *hō'a-zīn*, or TOURACO, *tō-rāk'ō* (*Opisthocomus cristatus*): tropical bird nearly as large as a peacock, which it somewhat resembles in its gait and manners; a native of Guiana and Brazil; referred by some naturalists to the family *Cracidae* (with



Hoazin (*Opisthocomus cristatus*).

curassows and guans) and the gallinaceous order; by others regarded as of the order *Insesores*, and allied to the plantain-eaters; indeed the peculiarity of its anatomical structure, unique among birds, has given rise to great variety in the classification. Its anatomy is remarkable: it has an enormous crop, while the gizzard is very small. It has a harsh hissing note, and unpleasant odor, is gregarious, and frequents marshy situations.

HOAD'LEY, GEORGE: lawyer: b. New Haven, 1826, July 31. He graduated at Western Reserve College 1844, studied law at Harvard College, was admitted to the bar 1849, was elected judge of the superior court of Cincinnati 1851, and city solicitor 1855. He became judge of the new superior court 1858, twice declined appointment to the state supreme court, resigned his judgeship 1866, was elected governor of O. as a democrat 1883, and defeated 1885. He was prof. in the Cincinnati Law School 1864-87, and in the latter year removed to New York to practice.

HOADLEYISM: see BANGORIAN CONTROVERSY.

HOADLEY, *hōd'lē*, BENJAMIN, D.D.: English prelate, 1676, Nov. 14—1761, Apr. 17; b. Westerham, Kent; second son of the Rev. Samuel Hoadley, master of the Norwich Grammar School. In 1691, he entered Catherine Hall, Univ. of Cambridge, where he became tutor after taking his degree M.A. In 1701, he was chosen lecturer of St. Mildred in the Poultry, London, and began to attract attention as a controversial writer. His *Reasonableness of Conformity to the Church of England* appeared 1703, which, like all his other performances, though agreeable to the sentiments of the educated laity of the Church of England, was exactly the reverse to the great body of the

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clergy, both established and dissenting. Next year, he obtained the rectory of St. Peter-le-Poor, London, and was soon engaged in a controversy with Dr. Atterbury (q.v.) on the extent of the obedience due to the civil power by ecclesiastics. This contest was conducted by H. in such a way as to secure for him the applause of the house of commons, who, in their address to the queen (Anne), referred to his important services to the cause of civil and religious liberty. In 1710, H. was presented to the rectory of Streatham, in Surrey; and 1715, when the accession of George I. had secured the triumph of whig principles, was made Bishop of Bangor; but it is affirmed he never visited the see, for fear of exciting a 'party fury.' He was, however, far from remaining idle. In 1717, he preached before the king a sermon on the text, 'My kingdom is not of this world,' in which he endeavored to show that Christ had not delegated his powers to any ecclesiastical authorities. He carried this idea to great length, and maintained that it was the best and safest ground in attempting to refute both Rom. Catholics and Dissenters. Hence originated the famous Bangorian Controversy, regarding which Hallam says, that it was 'managed, perhaps on both sides, with all the chicanery of polemical writers, and disgusting both from its tediousness, and from the manifest unwillingness of the disputants to speak ingenuously what they meant.' H.'s principal opponent was William Law. Hallam speaks of having read 40 or 50 pamphlets on the question. In 1721, H. was transferred to the see of Hereford; 1723, to Salisbury; and 1734, to Winchester. In 1735, he published a *Plain Account of the Nature and End of the Lord's Supper*; and 1754-5, two vols. of sermons, which were highly esteemed.

HOANG-HO': see HWANG-HO.

HOAR, a. *hōr* [AS. *har*, hoary: Icel. *hæra*, gray hair; *hærdr*, gray-haired: F. *haire*, a hair shirt]: white, as with frost or age; in *OE.*, moldy; musty: V. in *OE.*, to become moldy or musty. HOARY, a. *hōr'ī*, white or gray with age; grayish-white; thickly covered with short whitish hairs. HOAR'INESS, n. *-nēs*, the state of being whitish or gray. HOAR-FROST, frozen dew or vapors on the surface of the ground; rime: see DEW.

HOAR, *hōr*, EBENEZER ROCKWOOD, LL.D.: lawyer: b. Concord, Mass., 1816, Feb. 21. He graduated at Harvard College 1835, was admitted to the bar 1840, was common-pleas judge 1849-55, state supreme judge 1859-69, U. S. attor.gen. 1869-70, member of the joint high commission (Geneva Arbitration) 1871, and representative in congress 1873-75. He d. 1895, Jan. 31.

HOAR, GEORGE FRISBIE, LL.D.: lawyer: b. Concord, Mass., 1826, Aug. 29. He graduated at Harvard College 1846, was admitted to the bar 1849, member of the state assembly 1852, senate 1857; representative in congress 1869-77, elected U. S. senator 1877, 83, 89, 95 and 1901, to republican national convention 1876, 80, 84, overseer of Harvard Univ. 1874-80, regent of the Smithsonian Institution 1880, trustee of the Peabody Museum of Archæol-

HOAR—HOB.

ogy, member of the Mass. Hist. Soc., and pres. of the American Antiquarian Soc. He received the degree LL.D. from William and Mary and from Amherst Colleges, and Harvard and Yale Universities.

HOAR, SAMUEL, LL.D.: 1778, May 18—1856, Nov. 2; b. Lincoln, Mass.: statesman. He graduated at Harvard College 1803, was admitted to the bar 1805, settled in Concord, Mass. to practice, was member of the state constitutional convention 1820, state senate 1825–33, representative (whig) in congress 1835–37; commissioner of the Mass. legislature to that of S. C. to test the constitutionality of S. C. laws authorizing the imprisonment of free negroes there from other states, and was expelled from Charleston by order of the legislature 1844, Dec. 5. He was a member of the Mass. Hist. Soc., American Bible Soc., and the American Acad. of Arts and Sciences. He married a daughter of Roger Sherman, was father of EBENEZER ROCKWOOD H. and GEORGE FRISBIE H., and received the degree LL.D. from Harvard College 1838.

HOARD, n. *hōrd* [AS. *hord*; Goth. *huzd*; O.H.G. *hort*; Icel. *hodd*, treasure]: a store or stock of anything accumulated or laid up; a hidden stock; a treasure: V. to collect and lay up a quantity of anything; to amass or store up secretly. HOARD'ING, imp.: N. the habit or practice of secreting money or treasure. HOARD'ED, pp. HOARD'ER, n. one who.

HOARD, n. *hōrd*, or HOARD'ING, n. [Dut. *horde*, a fence of branches: OF. *horde*, a palisade, a barrier: Ger. *hürde*, a frame of rods; *hürding*, a fence]: a timber fence inclosing builders while at work; a fence about any building while erecting or under repair.

HOARHOUND: see HOREHOUND.

HOARINESS, HOARY: see under HOAR.

HOARSE, a. *hōrs* [AS. and Icel. *has*; Ger. *heiser*; Dut. *heesch*, hoarse]: having a rough grating voice, as from a cold. HOARSE'LY, ad. *-li*. HOARSE'NESS, n. *-nēs*, harshness or roughness of voice or sound; unnatural asperity of voice: see THROAT, DISEASES OF.

HOARY: see under HOAR.

HOAX, n. *hōks* [AS. *hucx*, or *husc*, slight irony: really a corruption of *hocus*, in the phrase *hocus-pocus*, to play a trick on]: something done for deception; a deceptive trick; an imposition: V. to play a trick upon for sport; to deceive. HOAX'ING, imp. HOAXED, pp. *hōkst*.

HOAZIN: see HOACTZIN.

HOB, n. *hōb*, or HUB, n. *hūb* [connected with *hump*, an excrescence, which see: Ger. *heben*, to raise; *gehoben*, raised]: an excrescence or projection; the little cap in the centre of a wheel which covers the end of the axle: one of the two flat raised side parts of a grate; the mark to be thrown at in quoits.

HOB, n. *hōb* [Scot. *habble*, to stammer: Dut. *hobbelen*, to stammer, to jolt: Dan. *hob*, a heap: prov. Ger. *heppeln*, to

HOBART.

hop]: a country clown; a rustic. **HOBBLE**, v. *hŏb'ł*, to walk lamely; to limp; to fasten loosely together the legs; to clog: N. an unequal limping walk. **HOBBLING**, imp. *hŏb'ling*: **ADJ.** walking with a halting step; limping. **HOBBLED**, pp. *hŏb'ld*. **HOB'BLER**, n. *-lér*, one who. **HOB-BLINGLY**, ad. *-lŭ*. **HOBGOB'LIN**, n. *-gŏb'lin*, a clownish goblin; a frightful fairy. *Note.*—**HOB**, it appears, was also a popular corruption of the familiar name *Robin*, which fact accounts for one of its significations at least. Littré considers *hob* a mere pet corruption of *Robert*.

HOBART, *hŏ bert* (till 1881, known as **HOBART TOWN**): capital of Tasmania, on the noble estuary of the Derwent, in the south of the island, named from Lord H., colonial sec. The mean temperature for 35 years was 55·41° Fahr., and the climate is admirable for invalids. H. came under municipal govt. 1853. Besides the government official buildings, H. has a college and seven public and numerous private schools, more than 30 churches, and two cathedrals; and its naturally excellent harbor and fine quay accommodate ships of the largest size. Tasmanian ships trade between H. and London. H. has railway communication with Launceston. Pop. (1881) 21,118; (1901) 24,655.

HOBART—HÖBART-PASHA.

HOBART, GARRETT AUGUSTUS: lawyer, statesman: 1844, June 3—1899, Nov. 2; b. Long Branch, N. J.; of mingled New England and colonial Dutch descent. He graduated from Rutgers Coll. 1863, taught school for a while, then studied law in Paterson, N. J.; was admitted to the bar 1866, and began practice in that city. Though he had a vast number of legal cases put in his hands, he appeared in court with remarkable infrequency, his plan being to arrange settlements of disputes privately. pres. of Patterson Railway Co., which the owns trolley. He was director in at least 60 different companies, lines, and of the City Water Co.; besides he held interests in various manufactories and railroads. At the age of 30 he was a member of the legislature; was speaker of the house; afterward a member of the state senate and for two terms its pres. He was always an earnest republican, but was noted for justice and magnanimity to his political rivals. The national convention of the republican party 1896 nominated him for vice-pres. on a platform embodying protection, and declaring against free-silver coinage and in favor of maintaining the existing gold standard, and he was elected.

HOBART, hō'bért, JOHN HENRY, S.T.D.: 1775, Sep. 14—1830, Sep. 12; b. Philadelphia: bp. of the Prot. Epis. Church. He graduated at the College of N. J. 1793, was tutor there 1796–98, was ordained deacon in the Prot. Epis. Church 1798, priest 1801, rector of Christ Church, New Brunswick, N. J., 1799, and of St. George's Church, Hempstead, L. I. 1800; assist. minister of Trinity Church, New York, 1800; assist. rector there 1812, and rector 1816; and was elected assist. bp. of New York 1811, and bp. 1816. He was a founder of the General Theol. Seminary in New York, and became prof. of pastoral theol. and pulpit eloquence there 1821. His published works include *Companion for the Altar* (1804), *Festivals and Fasts* (1804), *Companion to the Book of Common Prayer* (1805), *Clergyman's Companion* (1805), *Apology for Apostolic Order* (1807), *The Christian Manual* (1814), *Essay on the State of the Departed* (1814), an edition of D'Oyley and Mant's family Bible, 2 vols. (1818–20), and numerous sermons.

HOBART-PASHA, hō'bért-pá-shá' (AUGUSTUS CHARLES HOBART): naval officer: 1822, Apr. 1—1886, June 19; b. England; son of the Earl of Buckingham. He entered the British navy 1836, distinguished himself as midshipman on the expedition to suppress the slave trade in Brazilian waters, was appointed lieut. on the queen's yacht, as capt. commanded H. M. S. *Driver* in the Crimean war, and during the American civil war commanded the Confederate blockade-runner *Don*, and was promoted post-capt. in the British navy. In 1867, on the outbreak of the Cretan insurrection, he entered the Turkish service, and commanded the fleet that blockaded the Greek ports. For his services in averting a general European war he was decorated by Turkey, France, and Austria; but his own country struck his name from its naval list for engaging in foreign

HOBBEA—HOBBS.

service without permission. After long negotiations he was restored, but remained in the Turkish service and became admiral of the Turkish navy, commander of the Black Sea fleet in the Russo-Turkish war 1874, and marshal of the empire 1881. He was author of *Sketches from My Life* (posthumous 1887).

HOBBEA, *hōb'bē-mā*, MEYNDERT, or MINDERHOUT, or MINARD: about 1638–1709, Dec. 14; b. Holland: painter. All accounts of his personal career are lost excepting the record of his grand landscapes, for which he has been placed on a par with Ruysdael. He delighted in forests and ruins, and like Jan van der Heyden (q.v.), had his figures painted by other artists, notably Berghem, Van der Velde, Lingelbach, and Van Loo. Those that are considered his best paintings are dated 1663–67, but many of his dates are deemed erroneous; they certainly are at variance with the accepted dates of his career. His works were long unappreciated, but one of them—a watermill—was bought for the Antwerp Museum 1876 for \$20,000, and a smaller one was afterward sold to an English gallery for \$21,500. Others of his works are found in the Brussels, St. Petersburg, Grosvenor, the Louvre, and Vienna galleries, and in several English and Dutch collections.

HOBBS, *hōbz*, THOMAS: 1588, Apr. 5—1679, Sep. 4; b. Malmesbury, England; son of a clergyman of that town. At the age of 14, he went to Oxford, and passed through the usual course of Aristotelian logic and physics. His instructions in the syllogism he afterward held in small estimation. At the age of 20, having taken his degree and quitted Oxford, he was recommended to Lord Hardwicke, afterward Earl of Devonshire, as tutor to his eldest son, this being the commencement of an intimate connection with that great family which lasted through his long life.

In 1610, with his pupil, he made the tour of France and Italy. After his return, he lived with the Devonshire family, and his residence in London afforded him opportunities of becoming acquainted with Bacon, Raleigh, Ben Jonson, and other distinguished men of the time. Meantime, he was occupied with his classical, political, and philosophical studies, and prepared for publication his first work, a translation of Thucydides, published 1628.

The Earl of Devonshire having died 1626, and the young earl, Hobbes's pupil, 1628, H. was in great grief, and took an opportunity of going abroad with the son of Sir Gervase Clifton, and remained some time in France. In 1631, however, his connection with the Devonshire family was resumed. By the desire of the dowager-countess, he undertook the education of the young earl, then 13 years old, son of the former pupil. He was in Paris 1634–37. He seems then to have applied himself to the composition of his first original work, entitled *Elementa Philosophica de Cive*, printed Paris 1642; his first exposition of his moral and political philosophy. His advocacy of pure and unrestrained monarchy as the best possible form of govern-

HOBBLEDEHOY.

ment, with an absolute submission on the part of the subjects both in law and in morality and religion to the will of the monarch, has probably given more general offense than any political theory propounded in modern times. It has been made the subject not only of incessant attack, but also of gross misrepresentation. He published soon afterward two small treatises, *Human Nature*, and *De Corpore Politico*. The first contains his views as to the constitution of the mind, and entitles him to be considered the father of modern systematic psychology. Although the work is valuable in itself, he considers it a prelude to the other treatise, *De Corpore Politico*, on the nature of society, a subject here handled for the second time by him, and in much the same strain. He goes over the whole ground a third time in the *Leviathan*, 1651, the fullest and perhaps the best known exposition of his views on mind, politics, morals, and religion. Here he contends as before in favor of pure monarchy, which he represents to have grown out of a primitive contract between the sovereign and the people, moved by the desire to escape from all the evils of a state of nature, which is a state of war. He is far from justifying tyranny; on the contrary, he enjoins upon the monarch a government according to just laws, and considers that this is more likely to be obtained by the government of a single person, whose selfish aims must be sooner satiated than if the supreme power were distributed in a number of hands.

After the meeting of the Long Parliament 1640, he had returned to Paris, from his dread of the civil troubles. In 1647, he was appointed mathematical tutor to the Prince of Wales, afterward Charles II., and stood high in the esteem of that prince; but the obnoxious character of his writings, especially after the publication of the *Leviathan*, so offended the royalist clergy, in common with all other sects, that Charles was induced to part with him; and he himself, being constitutionally timid, took the alarm for his personal safety, and abruptly fled from Paris to England. In England, he found himself safe, the Prot. government according him ample toleration. Very different was his position after the 'glorious' restoration of his own friends; for though Charles granted him a pension of £100 a year, the dislike to his views was so general that they were condemned by parliament 1666, and he was in danger of still severer measures. His connection with the Earl of Devonshire, with whom he lived in the latter part of his life, was no doubt a powerful protection to him. His old age was fruitful in additions to his writings, and was marked by some sharp controversies. His last works were a translation of Homer, and a History of the Civil Wars.—II. has been called the second great English deist, Herbert of Cherbury being the first. It has been said that he gave 'the first clear exposition and defense of the *psychological* doctrine of determinism.'

HOBBLEDEHOY, n. *hob'l-dē-hoy* [comp. Gael. *abartach-oige*, an unmanageable youth]: a youth not yet come to man's estate.

HOBLER—HOBOKEN.

HOBLER, n.: a light horse-soldier: see under HOBBY 1.

HOBBY, n. *hōb'bī*, or HOBBY-HORSE [Ger. *hoppe*, a mare: OF. *hobin*, a little ambling horse: Fris. *hoppe*, a horse, in nursery language]: a little, strong, active horse; a nag; a stick across which young boys place themselves in play; a wooden horse on which children ride; a pasteboard representation of a horse fastened to a man, who appears then to be riding on horseback; the favorite object or pursuit of any one. HOBLER, n. *hōb'lēr* [O.F. *hobiler*]: in *OE.*, one who served as a soldier on a *hobby* in light armor.

HOBBY, n. *hōb'bī* [F. *hobereau*, a hobby—from OF. *hobe*, a small bird of prey], (*Falco subbuteo*): small species of falcon, native of most parts of Europe, and of many parts of Asia and Africa. It is in utmost length about 12 or 14 inches. It is grayish-black or bluish-gray on the upper parts, each feather edged with yellowish-white, and the whole form very elegant. The H. was often used in falconry, and trained to fly at pigeons and partridges.

HOBGOBLIN, HOBBLING: see under HOB 2.

HOB'HOUSE, JOHN CAM: see BROUGHTON, LORD.

HOB-NAILS, n. *hōb'nālz* [Ger. *hufnagel*, a hoof-nail (see HOB 1)]: the nails with big heads set in the thick soles of a country shoe; the nails of a horse-shoe.

HOBNOB, v. *hōb'nōb*, or HOB-A-NOB, v. *hōb'ā-nōb'* [AS. *habban*, to have, and *nabban*, to have not]: to take it or leave it; at a *social meeting*, a friendly invitation to reciprocal drinking. HOBNOB'BING, imp. HOBNOBBED', pt. and pp. *-nōbb'*.

HOBOKEN, *hō-bō'kēn*: city in Hudson co., N. J., on the Hudson river and the Del. Lackawanna and W. railroad; adjoining Jersey City, N. J., and opposite New York. It is the starting point of several lines of European steamships, has ferryboat connections with New York and street car with Jersey City and northern suburban villages, is well paved and drained, has gas and electric lights and good police and fire systems, and is a popular place of residence for German-Americans. Above it and $\frac{1}{2}$ m. from the river rises the s. extremity of the Palisades of the Hudson, on which are Castle Point, the old mansion and grounds of the late Edwin A. Stevens, and the institute founded by him. Near by is the site of the 'Elysian Fields,' a popular resort for New Yorkers of former days and a noted duelling ground; and a cave that has been variously associated with the still unsolved mystery of the disappearance of Mary Rogers, the pretty New York tobacco-girl, 30 years ago. The river front of H. is lined with wharves, and there are numerous commodious warehouses, including two bonded ones of the federal govt. H. is also a noted coal-shipping point; and the coal, steamship, and railroad interests form its chief industries though a large business is done in the manufacture of lead pencils, machinery, steam-engines, and beer. Its principal buildings are the Stevens Institute of Technology of world-wide fame, founded by Edwin A. Stevens, who gave the site

HOBSON—HOCHE.

\$150,000 for buildings and \$500,000 for endowment, and opened 1871; the monastery of the Passionate Fathers (Rom. Cath.), whence miraculous cures have been reported; Martha Institute; St. Mary's Hospital; and several academies. It contains also 15 churches, 4 public schools, 2 national banks (cap. \$235,000), and 1 savings bank, and several English and German weekly papers. H. received its name from a village on the Scheldt near Antwerp, was settled by the Dutch early in the 17th c., was for many years counted as an island in the possession of New York, and received its city charter 1855. Pop. (1890) 43,561; (1900) 59,364.

HOBSON, *hōb'sŭn*, **RICHMOND PEARSON**: naval officer: b. 1870, Aug. 17, at Magnolia Grove, Ala. He graduated from the Naval Academy at Annapolis at the head of the class of 1889 and won distinction in the study of naval construction in France. In 1891 H. was made assistant naval constructor, and served in the Naval Intelligence Department and the Bureau of Construction and Repair. In 1894 he was assigned to the Brooklyn Navy Yard, and later to the flag-ship *New York*. He inaugurated the system of sea duty for constructors, and also proposed, organized, and conducted a post-graduate course at the U. S. Naval Academy. During the SPANISH-AMERICAN WAR (q.v.) H. performed an act of heroism for which his name was specially mentioned, and in recognition of which he was promoted captain. On June 3, 1898, with seven companions, George Charette, J. C. Murphy, Osborn, Deignan, Randolph Clausen, George Phillips, and Francis Kelly, he sailed into the mouth of the harbor of Santiago de Cuba on the steam-collier *Merrimac* for the purpose of closing up the same by sinking his vessel under the batteries of Morro Castle and thus "bottling up" the Spanish fleet under Admiral Cervera which was known to be in the harbor. The *Merrimac* was sunk, but in sinking veered out of the position she was intended to occupy. H. and his companions were taken prisoners by the Spaniards and exchanged on July 6. He resigned from the navy, 1903.

HOBSON'S CHOICE, *hōb'snz*: that or none; no alternative. *Note*.—In time of King Charles I. Hobson was an innkeeper of Cambridge, and hirer of horses, whose large stud was hired out to travellers in strict rotation, and no choice or selection was permitted.

HOCHE, *ōsh*, **LAZARE**: 1768, June 25—1797, Sep. 18; b. Montreuil, a faubourg of Versailles: eminent general of the French republic. In 1785, he entered the army, rapidly obtained promotion, and was raised, 1793, to the command of the army of the Moselle. Here he was opposed to the Duke of Brunswick, commander of the Prussian army, and was by him repeatedly defeated. He was more successful against the Austrians, whom he drove out of Alsace. His next important service was putting an end to the civil war in La Vendée. In the winter of 1796, he was commander of the troops in the unfortunate expedition to Ireland. Returning, he was appointed to command the army of the Sambre and Meuse. 1797, Apr. 18, he crossed the Rhine at Neuwied, and had defeated the Austrians in several battles, when his career was stopped by the armis-

HOCHHEIM—HOCUS.

tice between the Archduke Charles and Bonaparte at Leoben.

HOCHHEIM, *hōch'hīm*: small town of Prussia, in Hessen-Nassau, on the slopes of the right bank of the Main, 3 m. from Mainz. Several varieties of excellent wine produced here are known as *Hochheimer*; hence the English name *Hock*, now given indiscriminately to all wines from the Rhine regions.

HOCHKIRCH, *hōch'kīrch*, or **HOCHKIRCHEN**, *hōch'kīrch-en*: village in the dist. of Bautzen, Saxony; scene of a battle between the Austrians and Prussians (1758, Oct. 14) during the Seven Years' War. Frederick II. of Prussia, with an army 30,000 strong, having taken up an almost untenable position at H., was attacked, under cover of a thick fog, by Marshal Daun, with 50,000 Austrians, and compelled to retire to the heights of Dresa. Here he was again attacked by the Duke of Aremberg, and after a conflict of five hours' duration, again retired. He lost 9,000 men killed and wounded, and 101 cannons. He himself, and almost all his generals, were wounded. The Austrians lost 8,000 men. 1813, May 21, a battle took place here between the French and allies: see **BAUTZEN**.

HOCH'STADT: see **BLÉNHEIM**.

HOCK, or **HOUGH**, n. *hōk* [AS. *hoh*, the heel, the ham: AS. *hoh-sin*; Icel. *hásinn*, the hock-sinew, the hamstring: Ger. *hakse*, the foot-joint of the hind leg of a horse; *hacke*, the heel]: middle joint of hind leg, which is really the heel; *hough* is used in same sense, but signifies properly the back of the knee: V. to cut the hamstring. **HOCK'ING**, imp. **HOCKED**, pp. *hōkt*.

HOCK, n. *hōk* [*Hochheim* (q.v.) in Germany]: Rhenish wine.

HOCKEY, n. *hōk'ī*, or **HOOKEY**, n. *hūk'ī* [a probable corruption of *hockday*, a holiday anciently in England to celebrate the expulsion of the Danes: but probably so named because played with *hooked*- or curved-headed sticks]: a game played with a ball and a club with a curve at one end; the game in *Scot.* called *shinty*.

HOCKING, *hōk'ing* (or **HOCKHOCKING**) **RIVER**: in O.; rising in Fairfield co., flowing s.e. through Hocking co., and joining the O. river in Athens co., after a course of 80 m., which traverses the rich O. coal field. It gives little facilities for navigation. The chief towns on its banks are Lancaster, Nelsonville, Logan, and Athens.

HOCUS, v. *hō'kūs* [Dut. *hokus-bokus*; F. *hoccus-bocus*, the Latinized gibberish repeated by jugglers: perhaps connected with *Ochus-Bochus*, a magician and demon of the northern mythology]: to cheat or trick; to put a trick upon. **Ho'CUSSING**, imp. **Ho'CUSSEN**, pp. *-küst*, vulgarly said of liquor in which some narcotic has been put. **Ho'cus-po'cus**, a. *-pō'kūs*, a juggler's trick: V. to put a trick upon one. *Note.*—**HOCUS-POCUS** is said to be the vulgar pronunciation of '*hoc est corpus meum*,' 'this is my body'—the form of Latin words pronounced over the wafers by a priest

HOD—HODGE.

of the Rom. Cath. Chh. in order to their transubstantiation; the mumbling way in which the words were often pronounced appearing to the vulgar ear as *hocus-pocus*. The phrase arose during the Reformation excitement, which may account for its being used in the degrading sense of 'the gibberish of jugglers,' and 'gibberish in general'—see elder Disraeli. It is probable, however, that *hocus-pocus* is really the juggler's old phrase, derisively applied by the ignorant and excited populace of that time to the sacred words referred to, from its apparent similarity of sound.

HOD, n. *hōd* [F. *hotte*, a basket carried on the back: Ger. *hotte*, a basket in which grapes are gathered: Scot. *hot*, a small heap]: an open wooden box fitted with a handle, in which laborers carry mortar or bricks on their shoulders. HOD'MAN, n. a bricklayer's laborer; at *Oxford*, a slang term for a young scholar from Westminster School admitted to Christ Church College, Oxford.

HODDEN-GRAY, n. *hōd'n-grā* [probably connected with *hoiden*, an ill-bred clownish wench, a rustic]: a coarse cloth made of undyed wool.

HODGE, *hōj*, ARCHIBALD ALEXANDER, D.D., LL.D.: Presb. clergyman: 1823, July 18—1886, Nov. 11; b. Princeton, N. J.; son of CHARLES H., D.D., LL.D. He graduated at the college of N. J. 1841, and the Princeton Theol. Seminary 1847; was missionary in India 1847–50; pastor at Lower West Nottingham, Md., 1851–55; Fredericksburg, Va., 1855–61; and Wilkesbarre, Penn., 1861–64; prof. of didactic theol. in Western Theol. Seminary, Allegheny, Penn.; also pastor of a church there 1864–77; associate prof. of didactic and polemic theol. at Princeton 1877; succeeded his father as full prof. 1878. He was author of *Outlines of Theology* (1860), *The Atonement* (1867), *Commentary on the Confession of Faith* (1869), *Life of Charles Hodge* (1880), and *Manual of Forms* (1883). He received the degree D.D. from the College of N. J. 1862, and LL.D. from Wooster Univ., O., 1876. Dr. H. was a man of close logical thought and great simplicity and modesty.

HODGE, *hōj*, CHARLES, D.D., LL.D.; 1797, Dec. 28—1878, June 19; b. Philadelphia: Presb. theologian. He graduated at Princeton College 1815, and 1822 became prof. of oriental and biblical literature in Princeton Theol. Sem.: 1826–28 he studied in Paris, Halle, and Berlin. In 1840, he was transferred to the chair of theology, and held this position till the close of his life. He was founder and long the editor of the *Princeton Review*; and besides more than 130 essays, etc.; he was author of Commentaries on Romans, Corinthians, and Ephesians, on a work on the history of the Presb. Church in America (1840), of a criticism of Darwinism (1874), and of the well-known *Systematic Theology* (3 vols. 1872), now a standard work of the Calvinistic churches. H. had much gentleness of spirit, combined with fervent convictions, logical clearness, and great vigor in controversy. His influence was and is wide and deep on the opinion and movements of his denomination; and his great work, *Systematic Theology*, is un-

HODGE-PODGE—HOE.

doubtedly the best modern exposition of Calvinistic doctrine.

HODGE-PODGE, n. *hŏj-pŏj*, or **HOTCH-POTCH**, n. *hŏch-pŏch* [Dut. *hutspot*; F. *hochepot*—from prov. F. *hach'-poter*, to hack, to cut to bits]: a mixed mass, or a medley of ingredients; a soup with a large variety of vegetables.

HODGKINSON, *hŏj'kĭn-son*, **EATON**: 1789, Feb. 26—1861, June 18; b. Anderton, near Norwich, Cheshire, England: prof. of the mechanics of engineering in University College, London, and the chief authority on the application of iron to architecture and engineering. At the age of 21 he settled in Manchester. At this time the principal authority on iron beams was Tredgold (q.v.), but his theories were overturned by H. H. made a series of 227 experiments on the strength of pillars, generally in conjunction with Sir William Fairbairn (q.v.). For his important experiments and calculations, and general co-operation in the construction of the Britannia Bridge, he received a first-class medal at Paris 1855. His investigations are in *Transactions* of the British Asso. and the *Memoirs* of the Manchester Society. He also edited *Tredgold on the Strength of Cast Iron*, adding his own theories (1842-46). H. died near Manchester. See **STRENGTH OF MATERIALS: TUBULAR BRIDGES**.

HODJA, n. *hŏd'ja* [Per. *khavadje*, a reader]: professor in a secondary school attached to a mosque in Turkey.

HODOGRAPH, n. *hŏd'o-grăf* [Gr. *hodos*, a road; *graphō*, I write, I describe, I draw]: in *math*, a curve originated by Sir W. Hamilton, used to illustrate the theory of central forces.

HODOMETER, *hŏ-dŏm'ĕt-er*: instrument for measuring the distance travelled by any vehicle: usually spelt **ODOMETER** (q.v.). **HODOMETRICAL**, a. *hŏd-o-mĕt'rik-al*, of or pertaining to a hodometer; in *naut.*, applied to the method of finding the longitude at sea by dead reckoning.

HOE, n. *hŏ* [F. *houe*, a hoe; *houer*, to dig up; Ger. *haue*, a hoe; Dut. *houwer*, to pick or hoe—from *houwen*, to new]: a common garden or field tool. V. to dig or cleanse with a hoe; to clean from weeds. **HOEING**, imp.: N. the clearing or digging with a hoe. **HOED**, pp. *hŏd*.—The *Hoe* is an implement of gardening and of agriculture used for stirring the soil; drawing up earth to plants, thinning plants in drills, clearing the ground of weeds, etc. The many forms, all may be referred to two classes—*draw-hoes* and *thrust-hoes*, the former having the blade almost at right angles to the handle; the latter almost in the same plane with it. The thrust-hoe, or *Dutch Hoe*, is used chiefly for killing weeds, and for stirring ground to a slight depth. The draw-hoe, although much used as an implement of gardening, is in some countries scarcely used in agriculture except for the thinning (*singling*) of turnips, in which it is always employed. But in some countries it is extensively used in place of the spade. In some parts of the W. Indies almost all the tillage of the ground is done by the hoe. It is more adapted than the spade to the use of

HOE—HOF.

laborers whose feet are not provided with shoes. Hoes intended for tilling the ground, instead of the plow and spade, are much larger and heavier than those used in gardening, and are raised much higher, and brought down to the ground with greater force, somewhat like the pickaxe. Hoes for stirring very stiff soils are sometimes made with prongs instead of a blade.

In the improved agriculture of the present day, implements called *Horse hoes* are extensively used. They are intended for purposes corresponding with those of the thrust-hoe, and may be generally described as consisting of thrust-hoe blades, variously modified, and attached to a frame in order to be drawn by a horse. Various contrivances are employed to accommodate the blades to inequalities of surface, etc. Horse-hoes can only be employed for crops sown in drills; and the drills must be perfectly parallel as when made by a machine, if more than one interval is to be cleaned and stirred at once. In turnip-husbandry, a horse-hoe with several blades is often used to clear away the weeds from one interval.

HOE, RICHARD MARCH: inventor: 1812, Sep. 12—1886, June 7; b. New York: son of Robert H., manufacturer. He entered his father's printing-press manufactory 1827, became senior member of the firm on the death of his father 1833, also engaged in making steel saws, and obtained several patents for their improvement, invented the rotary or 'lightning' press and the web press, and established a free apprentice's school in connection with his foundry. See PRINTING.—His brother ROBERT H., (1815, July 19—1884, Sep. 13; b. New York), was associated with his father, and RICHARD M. H., became a member of the firm 1841, and was a founder of the National Acad. of Design.

HOECAKE, n. *hō'kāk*: name given to a cake of Indian meal, because sometimes baked on a hoe.

HOEK, n. *hō'ëk* [Dut. *hoek*, an angle or corner]: in *S. Africa*, a valley like an embrasure in a mountain-chain; a tortuous or twisting mountain glen.

HOE'S MACHINE: see PRINTING.

HOEVEN, *hō'ven*, JAN VAN DER: distinguished Dutch naturalist: 1801–68; b. Rotterdam. After studying medicine at Leyden, he established himself as a physician in his native town, where he remained till 1835, when he was elected prof. of zoology in the Univ. of Leyden, an office which he held till his death. His most important work is *Handboek der Dierkunde* (Leyden, 1827–33), of which a second ed., entirely recast, appeared 1846; a German translation 1848; and an English translation, by Prof. Clark of Cambridge, under the title *Handbook of Zoology*, with important additions, by the author and the editor, 1856–58.

JAN must not be confounded with his brother, CORNELIUS PRUYS VAN DER II., prof. of medicine in the Univ. of Leyden, and the author of several important works, among which is *De Historia Medicinæ* (Leyden 1842), and *D. Historia Morborum* (Leyden 1846).

HOF, *hōf*: manufacturing town of the kingdom of Ba-

HOFER—HOFFMAN.

aria, in Upper Franconia, in a fruitful district on the Saale, 23 m. n.e. of Beyreuth. Besides extensive manufactures of leather, and linen and woolen fabrics, a important transit trade, arising from its position on the frontiers of Bavaria, and on the railway connecting that country with Saxony, is here carried on. Iron and coal mines are worked in the vicinity. Pop. (1900) 32,781.

HOFER, *höfer*, ANDREAS: patriotic leader of the Tyrolese: 1767, Oct. 2—1810, Feb. 20; b. at St. Leonard, in the valley of Passeyr. In 1796, he led a body of Tyrolese against the French on the lake of Garda, in 1808, secret deputies, among whom was H., arrived at Vienna, to represent to the Archduke John the sufferings of the people, and their wish to be reunited to Austria. By the desire of the archduke, Baron von Hormayr sketched for them a plan of an insurrection, which met with such success that, in three days, 1809, Apr. 11-13, nearly the whole country was liberated. Napoleon, however, was victorious in Austria, and at once marched three armies to the Tyrol, to subdue the rebellious peasantry, who had been abandoned by the Austrians, in accordance with the armistice of Znaim (1809, July 12). At first, H. concealed himself in a cave in the valley of Passeyr; but when Spechbacher, Joachim Haspinger, a Capuchin, and Peter Mayer, at the head of the armed population, renewed the defense of the Tyrol, and repeatedly defeated the enemy, H. issued from his retreat, and took the leadership of the Tyrolese. At a battle, Aug. 12, on the Iselberg, Lefèbvre was driven from the Tyrol. H. conducted the civil and military administration till the peace of Vienna (Oct. 14). The French and Bavarians poured, for the third or fourth time, into the country, and after a brief struggle H. was compelled to take refuge in concealment. After two months he was betrayed into the hands of the French by a priest named Douay, conveyed to Mantua, tried, condemned, and shot. His family were indemnified for the loss of their property by the Emperor of Austria 1819, and his son ennobled. A statue of H., executed by Schaller, was erected 1834 in the church of the Franciscans, at Innsbruck, near the tomb of Emperor Maximilian I.

HOFFMAN, *höfman*, CHARLES FENNO: 1806-1884, June 7; b. New York: author. He received academical and collegiate education, was admitted to the bar 1827, practiced 3 years, and then adopted literature. He was an editor of the *New York American*, established the *Knickerbocker Magazine* 1833, bought the *American Monthly Magazine* of Henry William Herbert (q.v.) and edited it many years, and was afterward editor of the *New York Mirror* and *The Literary World*. The latter part of his life was clouded by a mental disorder. He published *A Winter in the West* (1835), *Wild Scenes in Forest and Prairie* (1837), *Vanderlyn*, novel (1837), *Greyslaer*, novel (1840), *The Vigil of Faith*, and *Other Poems* (1842), *The Echo*, poems (1844), *Lays of the Hudson*, and *Other Poems* (1846), and *Love's Calendar*, and *Other Poems* (1848).

HOFFMANIST—HOFFMANN.

HOFFMANIST, n. *hŏf'man-ĭst*: in *chh. hist.*, follower of Daniel Hoffman, prof. of theology at Helmstadt, who, 1598, maintained that there was a twofold truth, if it could be so called, one philosophical, the other theological, and that philosophical truth was falsehood in theology, or that reason and religion are antagonistic.

HOFFMANN, *hŏf'mán*, AUGUST HEINRICH (commonly called **HOFFMANN VON FALLERSLEBEN**): distinguished German poet and philologist: 1798, Apr. 2—1874, Jan. 20; b. at Fallersleben, in the district of Lüneberg. He went 1816 to the Univ. of Göttingen, which, in 1819 he left for Bonn. He soon gave up theology, for which his father had intended him, and occupied himself exclusively with philological and literary studies, which, from his first acquaintance with the Brothers Grimm (1818), he turned more and more to his native language and literature. After travelling through the Rhine countries and Holland in search of popular poetry, and living some time in Berlin, he was made keeper of the university library of Breslau 1823, extraordinary prof. of the university there 1830, and ordinary prof. of the German language and literature 1835. The publication of his *Unpolitische Lieder* (Unpolitical Lays) led to his being deprived of his office 1842, Dec. 20. For some years afterward, A., thrown entirely on literary work for his support, led a wandering life through the whole of Germany, Switzerland, and Italy, the subject of laudation on the one hand, or of vituperation on the other, and at times under the surveillance of the police. In 1845, he was naturalized in Mecklenburg. Restored to his rights in Prussia 1848, he drew from that time his statutory salary as a pension. He married 1849, settling on the Rhine, and in 1854 he went to Weimar. In 1860, he became librarian to the Duke of Ratibor at the castle of Korvei, on the Weser, where he died. His principal philological and antiquarian works are: *Horæ Belgicæ* (1830–37), *Reincke Vos* (1834), *Geschichte des Deutschen Kirchenlieds* (1832), collections of ancient German Political (1843) and Social (1844) songs, *Spenden zur Deutschen Literaturgeschichte* (1845), and *Die Deutsche Philologie* (1836). H.'s own poetry has a close alliance to popular song, and hits the tone of a genuine simplicity, tenderness, and pathos to a degree that scarcely any other poet of recent times has reached. He also produced many admirable tunes for his songs. The *Gedichte* appeared 1834 (8th ed. 1874), and he published numerous collections of songs, as *Allemannische Lieder*, *Soldatenlieder*, *Kinderlieder*, etc. He wrote an autobiography in 6 vols. (*Mein Leben*, 1862–70).—See Wagner's *H. von Fallersleben* (1869), and Gottschall, *Porträts* (1876).

HOFFMANN, AUGUST WILHELM F.R.S.: chemist: b. Giessen, 1818. After obtaining the degree of doctor of philosophy, he became assistant to Liebig in the Giessen Laboratory, and subsequently was appointed extraordinary prof. of chemistry in the Univ. of Bonn. When the Royal College of Chemistry was established, London 1845, H. was recommended by Liebig as highly qualified for the post of

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superintendent. This college, which has since merged into the Laboratory of the Royal School of Mines, owes much of its high character to his teaching and his scientific reputation. H. succeeded Prof. Graham as chemist to the mint. In 1865, H. accepted an appointment to be prof. of chemistry in the Univ. of Berlin, with the commission to found a chemical institute. He was a juror at all the international exhibitions (London, 1851 and 62; Paris, 1865 and 67). In conjunction with Dr. Bence Jones, he edited the later editions of Fownes's *Manual of Chemistry*. His numerous contributions to the *Annalen der Chemie und Pharmacie*, to the *Transactions of the Chemical Society*, and to the *Philosophical Transactions of the Royal Society*, are for the most part on the very highest departments of organic chemistry; and 1854 a royal medal was awarded to him for his *Memoirs on the Molecular Constitution of the Organic Bases*. It was in the course of these researches that he discovered in coal-naphtha aniline, the basis of the new colors mauve and magenta, which had previously been obtained only from indigo. For his practical applications of this discovery, one of the great prizes was awarded him at the Paris exhibition 1867. H's *Introduction to Modern Chemistry* (1865); 5th ed. (1871) soon led to great reforms in the teaching of chemistry. He died, 1892, May 5.

HOFFMANN, ERNEST THEODOR AMADEUS (originally WILHELM): one of the most original German story tellers: 1776, Jan. 24—1822, July 24; b. Königsberg, Prussia. He studied law there, and then found employment in the govt. offices at Grossglogau and in Berlin. In 1800, he became assessor to the govt. in Posen; but in consequence of some keen caricatures from him, which Gen. Zastrow and others in high position applied to themselves, he was removed 1802, as councilor to Plock, and 1803, in the same capacity to Warsaw, where the entrance of the French ended his career. Without prospects or fortune, he made use of his knowledge of music as a means of livelihood, and, though sometimes reduced to great straits, managed to support himself by giving music-lessons, and by contributing to the *Musical Gazette*, of Leipzig. In 1813, he went to Dresden as music director to a company of players alternating between Dresden and Leipzig, and continued to conduct the orchestra of the company till 1815. In 1816, he was again appointed by Prussia to be councilor in the royal supreme court of judicature at Berlin, where, before long, he was seized with a painful disease, the consequence of his irregular life, and after much suffering, died. From his youth, he had given his leisure hours to the study of music. The *Phantasiestücke in Callot's Manier*, *Elixire des Teufels*, *Nachtstücke*, *Die Serapionsbrüder*, *Lebensansichten des Kater Murr*, *Der Doppelgänger*, and a few shorter stories, appeared 1814-24. H. was a man of thorough originality, yet an excellent man of business and a lawyer. He had a keen understanding, but was full of fantastic ideas, and a believer in demons. His character was made up of incongruities; and between like contradictory extremes his novels range. His fame rests mainly on his novelettes, which are

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masterpieces in miniature, such as *Das Majorat*, *Fräulein Scudéry*, *Doge u. Dogaresse*. H.'s talents were wonderfully various; versatility was both his excellence and his defect: he not only distinguished himself as jurist, but also as poet and composer, and as caricaturist. He handled language in a masterly way, though not free from mannerism. A collection of his choice works appeared 1828 (10 vols.), and an ed. of his collected works 1857 (12 vols.). See Hitzig, *Aus H.'s Leben und Nachlass* (1823). In foreign countries, particularly France, H. has been repeatedly translated and imitated.

HOFFMANN, FRIEDRICH: 1660, Feb. 19—1742, Nov. 12; b. Halle: one of the most celebrated physicians of the last century. At the age of 15 his parents died, and very shortly afterward he was deprived by a fire of the small patrimony that devolved to him. Undismayed by misfortunes, he went 1678 to Jena, to study medicine, and thence proceeded to Erfurt, to become a pupil of the distinguished chemist Gaspard Cramer. He commenced practice at Minden in Westphalia, where he had influential connections, and where in a very short time he acquired a high reputation. After a residence of little more than two years in Minden, during which time he visited Holland and England, he removed to Halberstadt. In 1693, Frederick, Elector of Brandenburg, afterward King of Prussia, appointed H. to the professorship of medicine in the newly constituted Univ. of Halle. It was on his recommendation that the celebrated Stahl (q.v.), who had been his fellow-student at Jena, and subsequently became his great rival, was appointed one of his colleagues. At the urgent request of the king, H. removed to Berlin, where he remained three years; but finding that he could not pursue his studies in the atmosphere of the court, he returned to Halle; and though he subsequently attended the king at Berlin during a long illness, Halle was his residence during the remainder of his life. As a physician and a medical teacher, H. enjoyed a celebrity second only to Boerhaave, who contemporaneously occupied the chair of medicine at Leyden. Some of his special doctrines are now of little practical value; yet as a whole they turned the attention of physicians in new and important directions. Haller asserts that he amassed a large fortune by the sale of secret remedies, one of which is still designated Hoffmann's Anodyne Liquor (q.v.).

Of his numerous works, the greatest is his *Medicina Rationalis Systematica* (Halle, 1718-40, 9 vols. 4to), which occupied him more than 20 years, and was concluded in his 80th year. His complete works have gone through various editions. His *Opera Omnia Physico-medica, Denuo Revisa, Correcta et Aucta*, were printed, Geneva 1640, in six folio vols.; reprinted after his death with five supplementary vols. of previously unpublished *Opuscula*. These were reprinted at Venice 1745, in 17 vols., 4to, and twice subsequently at Naples on a still larger scale.

HOFFMANN'S AN'ODYNE LIQUOR: old name for the *Compound Spirit of Sulphuric Ether* of the London

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pharmacopœia; a mixture of ether, alcohol, and ethereal oil. It is often prescribed with laudanum, to prevent the nausea which the opium preparations frequently excite, and may be given in water, unassociated with anything else, as a stimulant and antispasmodic, in doses varying from half a dram to two drams.

HOFWYL, *hof'vil*: village of Switzerland, canton of Bern. six m. n. of the town of Bern. It was the seat of the educational and agricultural institution founded by Fellenberg (q.v.).

HOG, n. *hög* [W. *hwch*, a swine: Bret. *hoc'h*, a swine—from *houc'ha*, to grunt]: a pig; a swine; a gelded boar; a flat rough broom used by seamen for scrubbing: V. to scrape and scrub a ship's bottom under water; to become bent upward in the middle—applied to a ship strained out of shape; to cut short, as the mane of a horse. HOG'GING, imp. HOGGED, pp. *högd*, applied to a ship which, through some defect or strain, droops at each end. HOGGET, n. *hög'ët*, a boar of the second year. HOGGISH, a. *hög'ish*, resembling a hog; filthy; greedy; selfish. HOG'GISHLY, ad. -*lly*. HOG'GISHNESS, n. HOG-STY, an inclosure or house for hogs. HOG'S LARD, *lîrd*, the fat of the hog or swine. HOGGER-PUMP, the top pump in the sinking pit of a mine. HOG'GERS, n. plu. -*ërz*, stockings without feet worn by miners at their work. HOG'S BACK, in *geol.*, the ridgy structure of certain districts, consisting of alternate ridges and ravines. HOG-WASH, the liquid draff from the distillers given as a feeding stuff to swine. TO GO THE WHOLE HOG, in *Amer.*, to believe in and to follow out thoroughgoing principles; in *Eng.*, to spend the last *hog* or shilling; to carry a matter to the end whatever may be the consequences. *Note.*—In old and prov. Eng., *hog* is a shilling; also said of a crown-piece

HOG, or HOGG, n. *hög*, or HOG'GEREL, n. -*gër-ël* [Gael. *og*, young—said of any animal: Norm. F. *hogetz*, a hog: Dut. *hokkeling*, a beast of one year old, from being fed in the *hok* or pen]: a young sheep of the second year; a young sheep that has not been shorn. HOG'GET, same as HOG. WETHER-HOG, a young castrated male sheep. HOG COLT, a yearling colt. HOG GING, n. a place where young sheep are pastured. *Note.*—Hog in Scot. is applied to the young of several animals, though Hog is a young swine primarily, it is also applied to a young sheep: see Hog 1.

HOG (*Sus*): genus of mammals of the family *Suidæ* (q.v.). The neck is large, straight and short, the skin thick and covered with stiff bristles mixed with fine, short hair. On top of the neck the bristles often assume the form of a mane. The nose is long, terminating in a cartilaginous disk which is strengthened by a small bone to fit it for loosening the soil. There are 22 teeth in each jaw. In the wild boar the canine teeth are largely developed. They are also curved, project from the jaw, and are formidable weapons of offense and defense. The tail is short and small. The feet are cloven. Besides the two main toes which are protected by hoofs there are two rudi-

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mentary toes on each foot. They seldom touch the ground but, like the principal toes, they are covered with a horny substance. The period of growth of the hog is about five years, length of life about 30 years. In its natural state the H. is not very prolific and the pigs remain with the sow until they are two or three years old. The sows and pigs are gregarious, but the adult males usually live alone. The wild boar is still found in forests in n. Europe, is somewhat common in India, and in various other regions. He is hardy, vigorous, fleet of foot, and a desperate fighter, and is highly prized by hunters.

The common H. (*S. scrofa*) is found throughout the civilized world and is among the most valuable of domestic animals. The ancient Egyptians regarded the flesh as unfit for food, and it was prohibited to the Jews and Moham-medans. Hindus and many of the Buddhists also reject it. But among the most progressive nations the flesh is an esteemed article of diet. The skin is valuable for the manufacture of leather, the bristles are largely used for brushes, the fat supplies lard, lard oil, and is one of the ingredients of soap, while almost every other part of the body serves some useful purpose.

In the early history of this country several importations of swine were made from Europe. The animals increased rapidly in numbers, but receiving little care they soon degenerated. In the early part of the present century small importations were made from China, and about 1820 a few Berkshire swine were brought from England and sold for high prices. By crossing with the imported stock the native H. was considerably improved in the districts to which the new stock found its way. From 1850 to 60 there were a number of importations from England, but it was not until 1870 that there was anything like a general call for improved breeds. About that time importations increased and a few American breeds which had been formed were widely disseminated. No other domestic animal can be developed as quickly and to such an extent as the H., and the change which has been effected within the last half century is almost incredible. The number of swine on farms and ranches in this country 1889. Jan. 1, was estimated by the statistician of the agricultural dept. at over 50,000,000. valued at almost \$300,000 000. The annual sales of swine bring more money to farmers than any other class of live stock, and in some years receipts from swine exceed those from all other animals combined.

Among the principal English breeds popular in the United States are the Berkshire, Large Yorkshire, Essex, and Suffolk. The Berkshire is of good size, hardy, prolific, fattens easily, and yields an excellent quality of meat. The color is black, with white on face, feet, and tail. The Large Yorkshires attain great size, are white, hardy, and prolific, but mature slowly. The Essex is small, rather delicate, fattens easily, matures early, and makes excellent meat: color black. It is not prolific, and is better for crossing with a larger breed than for keeping pure. The Suffolk is small, white, with thin tail and a tender skin, is

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not prolific, matures early, and is easily fattened. It is said to be the oldest pure breed known in any part of the world. Among American breeds the highest rank is taken by the Chester White, Poland-China, and Duroc. The Chester White is large, white, hardy, and prolific. It matures slowly, but can be fattened readily before it is fully grown. It originated in Chester county, Penn. Many inferior swine have been sold under the name of this really valuable breed. The Poland-China is probably the most popular breed in this country. It originated in Ohio about 40 years ago, is large, prolific, fattens easily at any time, and supplies an excellent quality of pork: color, black and white. The Duroc, often called Jersey Red, is large, hardy, prolific, and fattens easily: color, red. It has been bred in N. J. about 50 years. There are many other breeds, both English and American, of less value.

The H. is very easily raised and is one of the most profitable of domestic animals. It requires less care than most kinds of stock, but amply repays proper attention. For its food it utilizes skimmed milk, surplus vegetables from the kitchen and garden, and various other material which would otherwise be wasted. When fed with grain it fattens very rapidly and gives quick and profitable returns. By its means vast quantities of corn grown at the West are transformed into a far less bulky and much more valuable shape.

The best stock available should be used for breeding and the boar at least should be a thoroughbred. The sow should not be bred until a year old. The period of gestation varies from 100 to 115 days, being shorter with young than with old animals. From 4 to 16 pigs are produced in a litter, and a vigorous sow may be bred twice a year. Breeding sows should be supplied with a liberal quantity and a considerable variety of food, but should not receive much meal. The pigs should remain with the sow five or six weeks. During this time they should have milk in a small trough which the sow cannot reach. After their separation from the sow, oats and corn, soaked in water, may be fed with milk. Through the whole period of growth liberal feeding will be most profitable. A comfortable pen, kept clean and dry, should be provided.

The diseases of the H. are almost invariably caused by injudicious feeding or improper management. The various anthrax disorders known as 'Hog Cholera,' which sometimes cause the loss of millions of dollars in a few weeks to the farmers of the West, are obscure in their origin. The best authorities believe them to be caused by improper feeding, especially the almost exclusive use of highly concentrated food, impure water, and unhealthful surroundings; and they are confident that proper attention to hygienic conditions would be an efficient preventive. By the same means the minor diseases might almost wholly be done away.

HOGARTH, *hō'garth*, WILLIAM: 1697, Nov. 10—1764, Oct. 26; b. London: celebrated painter and engraver. He served apprenticeship to a silversmith in Cranbourne street,

named Ellis Gamble, and next studied under Sir James Thornhill, historical painter, but not with marked success. About 1720, he set up for himself, and his first employment was to engrave coats of arms, crests, shop-bills, etc., after which he undertook to execute plates for booksellers, the chief of which are the prints illustrative of *Hudibras* (Lond. 1726). He then tried his hand at portrait-painting, and soon had ample employment, though he never cared anything for this branch of art. In 1729, he married (clandestinely) a daughter of Sir James Thornhill, and soon began to display his extraordinary talent for representing in pictures the follies and vices of his time. In 1733, appeared his *Harlot's Progress*, a series of six pictures, which, like his other works, were engraved by himself. It was these engravings, and not the original paintings, that made H. rich, and enabled him at the age of 48 to keep his carriage. The *Harlot's Progress* was followed by other moral histories and satirical representations of vice and folly, such as *The Rake's Progress* (eight engravings), *Southwark Fair*, *A Modern Midnight Conversation*, *The Distressed Poet*, and *Strolling Actresses in a Barn*. The success of these was great, and inspired H. with the belief that he could win reputation as a historical painter also. After several ineffectual attempts, he recovered from his delusion, and returned to the path which nature had appointed him. In 1741, he published *The Enraged Musician*; 1745, *Marriage à la Mode*, in a series of six engravings, the pictures for which were purchased for the National Gallery; and 1748, *The March to Finchley*. In 1753, he published his *Analysis of Beauty*, which excited much opposition and ridicule, and in which H. is generally held erroneous. In 1755 appeared *Four Prints of an Election*; and 1762, *The Times*, a cutting satire upon Pitt. H. was buried at Chiswick, where a handsome monument was erected to his memory, with an inscription by his friend Garrick. In the technical part of his art, H. was long thought not to have excelled, but modern opinion is more favorable in this respect. There has never, however, been any question regarding the greatness of his thought and invention, and his deep insight into the characteristics of his time and country. The moral of his satire is always stern, true, and unmistakable. A handsome edition of his works from the original plates, retouched by Heath, was published by Nichols (3 vols. Lond. 1820-22). See Lives by G. A. Sala (1866) and Austin Dobson (1879); and Chatto's ed. of works (3 vols. 1874).

HOGG, *hög*, JAMES: a Scottish poet: 1770-1835, Nov. 21; b. in the dist. known as the Forest of Ettrick, Selkirkshire. He was at school for two or three winters before he reached the age of eight, and then entered on the occupation of shepherd. His first song appeared anonymously 1801, and having gone shortly afterward to sell his employer's sheep in Edinburgh, he threw off 1,000 copies of verses which he had written. In the same summer, Scott visited the Ettrick Forest in search of materials for his *Border Minstrelsy*, when H. made his acquaintance, and placed in his possession a number of ballads, taken down from the reci-

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tation of persons resident in the district, which appeared in the third vol. of the *Minstrelsy*, 1803. In the same year, he published *The Mountain Bard*, the proceeds of which, together with two prizes for essays he received from the Highland Soc., amounted to £300. With this sum he took a farm, which proved a disastrous speculation. In 1810, he began a course of regular authorship. In 1813, his poem *The Queen's Wake* appeared. In 1814, he married; and though he afterward went to live on a farm given to him by the Duke of Buccleuch, he busied himself more with books and booksellers than with sheep and grazing. His pen was profitable, which was more than he could bring his farm to be. He died at Altrive. His works are numerous, comprising, beside the above, *Madoc of the Moor*, *The Pilgrims of the Sun*, *The Jacobite Relics of Scotland*, *Queen Hynde*, *The Border Garland*; and some songs of great beauty. He wrote extensively also in prose. His prose works are—*The Brownie of Bodsbeck*, *Winter Evening Tales*, *The Three Perils of Man*, *The Three Perils of Woman*, *The Altrive Tales*, a vol. of *Lay Sermons*, and *Life of Sir Walter Scott*.

After Burns, H. is unquestionably the greatest peasant-poet of Scotland. His finest work, in conception and finish, is *The Queen's Wake*. The general flow of the poem is lively and harmonious, while in one portion, that of *Kilmeny*, the reader seems to hear 'the horns of Elfdand faintly blowing;' another, *The Witch of Fife*, is weird. His prose works, though unequal, occasionally show great humor and always abound in graphic description. See *Memoirs of J. H.* by his daughter, Mrs. Garden (1885).

HOGGINS, n. plu. *hög'ins* [Icel. *hagga*, to move, to jog—from the jogging motion of the sieve]: in *OE.* sand sifted from the gravel before the stones are carted upon the roads—see Halliwell.

HOG-GUM: name given in the W. Indies to a resinous substance, there extensively used as a substitute for pitch, to tar boats and ropes; also for strengthening-plasters, etc., and internally as a diuretic, laxative, and stimulant medicine. It is disputed what tree produces the true hog-gum; some ascribing it to *Moronobea coccinea*, of nat. ord. *Guttiferæ*; some to *Rhus metopium*, a species of sumach, ord. *Anacardiaceæ*; and some to *Helwigia balsamifera*, ord. *Amyridaceæ*. The probability is that all these—and perhaps other—trees yield resinous substances of similar quality, commonly designated by the same name.

HOGH, n. *hög* [Norm. F. *hogue*, a hill—from mid. L. *hōgā*, a hill, a mound]: in *OE.*, a hill; a rising ground; a cliff.

HOGMANAY, n. *hög'män-ä'*, or HAGMENA [Norm. F. *au gui menez*, lead to the mistletoe]: in the n. of England, and lowlands of Scotland, an old name of the last day of the year, and of New Year's Eve (see NEW YEAR); a noted festival day, and one employed in merriment. There was a custom, now scarcely known, for persons to go from house to house on 'H-night,' asking in rude rhymes for

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cakes and cheese. *Note*.—In prov. Eng. *hogmena* [AS. *halig monath*, holy month] is a name given to the month of December, and to the giving of gifts in that month, particularly on the last day. In Devonshire, *hogminnie* is a word of contempt for a young woman. Gael. *og*, young; *maighdean*, a maid or virgin; *mnai*, women. Any connection with women and gifts clearly points to an anc. festival—see Dr. C. Mackay. As a probable source, we are also referred to a prov. F. *haguine*; Sp. *aguinaldo*, a New Year's gift—but every suggested origin of this word is mere guesswork.

HOG PLUM—SPANISH PLUM—BRAZILIAN PLUM: names given in the W. Indies and other tropical countries to the fruit of certain species of *Spondias*. The genus *Spondias* belongs to the nat. ord. *Anacardiaceæ*, or, according to some botanists, to a small ord. *Spondiaceæ*, differing from *Anacardiaceæ* in the lack of a resinous juice, and in



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the drupe having a nut with 2–5 cells and seeds, instead of one cell and one seed. The species of *Spondias* are trees and shrubs with pinnate leaves, which have a terminal leaflet, and flowers in racemes or panicles. Some produce very pleasant fruits, among which are *S. purpurea* and *S. lutea*; the species generally called Hog Plum in the W. Indies, because they are a common food of hogs, which revel in their abundance. *S. purpurea* has fruit about an inch in length, ovate or oblong, purple or variegated with yellow; the pulp yellow, with a peculiar but agreeable acid and aromatic taste. The fruit of *S. tuberosa*, called IMBUZEIRO in n. Brazil, is about twice the size of a large gooseberry, oblong, yellowish, with leathery skin and sweetish acid pulp. A much esteemed Brazilian dish is prepared of milk curds, sugar, and the pulp of this fruit, from which also a refreshing beverage is made for use in fevers.

The tree is remarkable for the numerous round black tubers—about eight inches in diameter—which it produces on

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its widely spreading roots, and which are very cellular, and full of water. They are evidently intended for the wants of the tree in the dry season, and are often dug out by travellers for the water, of which each tuber yields about a pint.—Closely allied to *Spondias* is the genus *Poupartia*, to which belongs the VI or TAHITI APPLE, formerly *Spondias dulcis*, a very fine fruit of the South Sea Islands.

HOG RAT, or HUTIA (*Capromys*): genus of quadrupeds, of family *Muridæ*, differing from rats in having four grinders on each side in each jaw, with flat crowns. The tail is round and slightly hairy, and is used for support in sitting erect, as by kangaroos, and for aid in climbing trees, in which these animals are very expert. They make much use of their fore-paws, as of hands. Their food is entirely vegetable. They are natives of Cuba, where they are numerous in the woods. They were much used as food by the aborigines. The best known species is of the size of a small rabbit.

HOGSCORE, n. *hög'skôr*: in curling, a distance-line drawn across the rink or course between the middle line and the tee.

HOGSHEAD, n. *högz'hëd* [Dut. *ochshood*; Sw. *oxhufvud*, head of an ox, a hogshead: Ger. *oxhoft*, a hogshead]: old English measure of capacity. For wine, it was equivalent to 63 gallons; for ale and beer, 54 gallons. In the United States, it is still used as a measure for liquids, equivalent to 63 gallons; but when used for tobacco, it varies in different states from about 750 to 1,200 lbs.

HOGUE, CAPE LA: see CAPE LA HOGUE.

HOHENLINDEN, *hō-ën-lînd'ën*: village in Upper Saxony (pop. 250), famous for the victory by Moreau over Archduke John. 1800. Dec. 3. After the expiration of the armistice concluded at Paersdorf, Nov. 13, Moreau's army took position on the plateau between the Isar and the Inn, and the Austrian army, under Archduke John, on the right bank of the Inn. The Austrian main body advanced amidst drifting snow, and attacked the divisions of Grénier and Grouchy with the utmost fury; but the French receiving considerable reinforcements under Ney, the assailants were driven back; and being attacked in the rear, were totally routed. The victory was decided likewise at other points in favor of the French, who were prevented from pursuit only by inclement weather, bad roads, and the short winter day. The Austrians lost 8,000 men killed and wounded, 11,000 prisoners, including 180 officers, and 100 pieces of artillery. The French lost 5,000 men killed and wounded. In consequence of this battle, the negotiations between the belligerent powers were resumed, soon resulting in the peace of Lunéville.

HOHENLOHE, *hō-ën-lō-éh*: ancient German principality, in Franconia, mediatized 1806; now comprised chiefly in Würtemberg, partly also in Bavaria. The princely family of H. formerly possessors of the principality, dates its ancestry to the early Dukes of Franconia. Of the two

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branches of it, the H.-Speckfeld branch is that which is represented in the present family.

HOHENSTAUFEN, *hō'en-stow-fën*: German princely house, which kept possession of the imperial throne 1138—1254. The founder of the family was FREDERICK VON BUREN, who lived about the middle of the 11th c., and assumed the name of H. from a castle of that name, the ruins of which are still seen on the summit of the Hohenstaufen Berg (2,240 ft.), a hill on the left bank of the Danube about 30 m. below Stuttgart. His son was the Chevalier Frederick von Staufen, Lord of H., who steadfastly supported Emperor Henry IV., and in return received the duchy of Swabia. Duke Frederick, at his death 1105, left two sons—Frederick II., the One-eyed, and Konrad; the former was immediately confirmed in Swabia by Henry V.; and 1112 the latter received the duchy of Franconia. After the death of Henry V., his family estates fell to the House of H.; and Lothaire of Saxony was elected his successor in the empire.

On Lothaire's accession, he revoked the grants made by previous emperors to the House of H., and thus gave rise to a furious war, in which Duke Frederick (his brother Konrad being absent in the Holy Land) had to encounter, single-handed, the whole power of the emperor, the House of Zähringen, and Henry the Proud, Duke of Bavaria and Saxony. After Konrad's return, fortune at first seemed to favor the brothers, but 1135 they were compelled to implore the emperor's forgiveness. They were then put in possession of all their estates. Konrad, 1138, was elected Emperor of Germany, as Konrad III. The succeeding emperors of this family were FREDERICK I. (q.v.) (1152-90), HENRY VI. (1190-97), PHILIP I. (1198-1208), FREDERICK II. (q.v.) (1212-51), and KONRAD IV. (1251-54).

HOHENSTEIN, *hō'en-stīn*: small manufacturing town in the kingdom of Saxony, 12 m. n.e. of Zwickau. Woolen, cotton, and linen goods, and machinery are the principal manufactures.

HOHENZOLLERN, *hō'en-tsöl' lérn*: province in s. Germany, but belonging to Prussia, is a narrow strip of land entirely surrounded by Würtemberg and Baden: about 441 sq. m.; pop. (1900) 66,780. The territory, whose surface is generally mountainous, is divided into the districts of Sigmaringen and Hechingen, which rank as mediatised principalities. The seat of provincial government is at Sigmaringen. H. is watered by the Neckar and some of its affluents, and by the Danube, which crosses it; it is also traversed by the eastern offshoots of the mountain-ranges of the Black Forest, the Rauhe Alb, and the Hart. The mountain valleys are productive, and yield abundance of fruit and corn, and flax in sufficient quantities for exportation; the forests abound in fine timber; there are iron mines in some mountain districts, which yield also gypsum, salt, and coal. The principal branches of industry are agriculture and the rearing of cattle, and the manufacture of toys and other articles in wood.

HÖHSCHIED—HOJO.

The population is almost exclusively Rom. Catholic and is under the jurisdiction of the Abp. of Freiburg. There is a Rom. Catholic college at Hechingen.

The HOHENZOLLERN FAMILY, from which the present dynasty of Prussia and of Germany is descended, traces its descent from Count Thassilo, a Swabian, who lived about the beginning of the 9th c., and founded a castle near Hechingen, on the Zollern heights, whence his descendants derived their patronymic. Some vague traditions connect the house of H. with the Colonna family of Rome, and with other Italian houses. About 1165 the first separation took place, Frederic IV. founding the elder or Swabian, and Konrad I. the younger or Franconian line. The elder line was subdivided, 1576, into the branches of H. Hechingen and H. Sigmaringen. Frederic VI., representative of the younger line, 1415 received from Emperor Sigismund the investiture of the electorate of Brandenburg, thus founding the present reigning dynasty of Prussia. The two branches of the elder line continued unbroken till 1849, when, in accordance with a family compact formed 1821, which declared the king of Prussia chief of the joint houses, the reigning princes of H. Hechingen and H. Sigmaringen ceded their respective rights and principalities to that monarch, who agreed to pay them annual pensions.

HÖHSCHIED, *hō'shīt*: town of Rhenish Prussia, 17 m. e. by s. from Düsseldorf. It has extensive lead-works and iron-works. Pop. (1880) 11,020.

HOIDEN, or HOYDEN, n. *hoy'dn* [O.Dut. *heyden*, a rude uncultivated man; *heyde*, a heath: W. *hoeden*, a flirt]: a rude or rustic girl. ADJ. rude; ill-taught; bold: V. to romp rudely. HOIDENING, or HOYDENING, imp. *-dn-ing*. HOIDENED, or HOYDENED, pp. *-dēnd*. HOIDENISH, or HOYDENISH, a. *-dēn-ish*, rude; bold.

HOISE, v. *hoyz*: in *OE.*, the older spelling of HOIST, to raise; to lift up.

HOIST, v. *hoyst* [F. *hisser*; Sw. *hissa*; Dan. *heise*, to hoist: F. *hausser*, to lift up]: to raise; to lift; to bear upward by means of tackle: N. a raising; a lift; an apparatus for raising or lifting bodies from the ground through the several floors of a building. HOIST'ING, imp. HOIST'ED, pp.

HOIT, v. *hoyt* [see under HOITY-TOITY]: in *OE.*, to leap; to caper. HOIT'ING, imp.: ADJ. over-lively. HOIT'ED, pp.

HOITY-TOITY, int. *hoy'tī-toy'tī* [Ger. *heyda heysa*, exclamations of high spirits and active enjoyment: Sw. *hojta*, to shout: *OE.* *hoit*, to indulge in noisy mirth: *OF.* *hait*, liveliness, gladness: Gael. *aite*, glad, joyous; *tait*, pleasure: imitative words]: an exclamation expressing a check to over-liveliness and exuberance of spirits; an old dance in time of Charles II.: ADJ. thoughtless; giddy; flighty.

HOJO: Japanese family, of which 12 members held military authority 1219-1333. Their residence was at

HOKIANGA—HOLBACH.

Kanakura. The Mongol invasion of Khublai Khan was repulsed under their leadership.

HOKIANGA, *hō-kē-áng'gá*: river of New Zealand, enters the Southern Ocean on the w. coast of the North Island, lat. 35° 30' s., and long. 173° 26' e. This point is almost the antipodes of Tangier, on the s. side of the Strait of Gibraltar.

HOKITIKA, *hō-kī-tē'ka*: capital of Westland, New Zealand, and the chief town on the w. coast. It owes its rapid rise to its being in the centre of a gold producing district. Pop. (1881) of electoral dist., 7,900; of town, about 3,500.

HOKUSAI (improperly **HOKFFSAI**, or **HOKESAI**): Japanese artist of the early part of the present c., famous for illustrations of Japanese scenery, costumes, and life. He was an extensive traveller, and the leading histories, narratives of travel, and magazine articles on modern Japan have been illustrated from his sketches. His unique work is preserved in the *Hokusai Tehon*, a collection of albums giving representations of every branch of native pictorial art, and the *Fuji Hiakke*, which contains 100 views of the famous volcanic mountain, the scene of annual Buddhist pilgrimages. His drawings also have furnished ideas and suggestions to all manner of artistic workmen on Japanese subjects.

HOLBACH, *hōl'bách*, **PAUL HEINRICH DIETRICH**, **Baron von**: French philosopher: 1723-1789, June 21; b. Heidelberg, in the Palatinate; of wealthy parentage. At an early age, he went to Paris, where he resided during the remainder of his life. As H. was remarkable for his social qualities, and kept a good table, the most eminent thinkers and writers of the day, such as Condorcet, Diderot, Duclos, Helvetius, Raynal, Rousseau, Buffon, etc., were in the habit of assembling at his house. The witty Abbé Galiani called H. the *maître d'hôtel* of philosophy. Here speculation, it is said, was carried to such daring lengths, that Buffon, D'Alembert, and Rousseau felt obliged to withdraw from the circle. H. was the zealous champion of naturalism, and contended not only against Christianity but against every positive religion. His principal work is the *Système de la Nature* (1770). In this work, the author endeavors to expound the natural principles of morality, and to investigate the origin of the conflicting opinions on virtue and vice. He discusses the maxims of religious morality, and takes a rapid survey of social and savage life. He touches on the so-called 'social compact,' and in the course of his observations to prove, among other things, that self interest is the ruling motive of man, and that God is only an ideal being, created by kings and priests. The materialism of the French *philosophes* of the 18th c. is nowhere more pernicious and paltry than in the writings of Holbach. It is but fair to state that his life was better than his books. He was a man of generous instincts in spite of his theory. When the Jesuits fell into disgrace during the reign of Louis XV., H., though he

HOLBEIN.

bated their system, and had written against them in the days of their prosperity, made his house an asylum for his old foes when the clouds gathered round them.

HOLBEIN, *hōl'bīn*, HANS, The Elder: date of birth and death unknown; but supposed to have died abt. 1524; b. Augsburg: Bavaria: painter. He appeared first as partner to his brother Sigmund who survived him (died 1540) and who signed both his own and his brother's paintings. H.'s work was mainly of a religious character, altar-pieces chosen from the Passion; and many of his drawings are preserved in the galleries of Basel, Berlin, and Copenhagen, displaying fine character portraiture. The closing years of his life were full of misfortune; he was accused as a defaulter at Augsburg; fled suddenly from Issenheim while executing a commission, and was sued by his brother and others for debt. Before 1512 many of his altar-pieces show artificial grouping and shallow stage-effect; after 1512 he seems to have regained some of his earlier N. Italian elements, modifying his old German art with a purer taste.

HOLBEIN, HANS, The Younger: one of the first masters of German art: abt. 1497–1543, Nov.; b. Augsburg; son of Hans H., the Elder, from whom he learned the rudiments of art. When little more than 18 years of age, he adorned several houses and churches at Basel with portraits, frescoes, and altar-pieces. Tradition has preserved many of his droll sayings, and his life is as rich in anecdotes as those of the greatest Italian painters. H. grew tired of Basel, and Erasmus, who took great interest in him, and endeavored to induce him to abandon his irregular course of life, introduced him to Sir Thomas More, who kept him employed in England nearly three years, and then invited Henry VIII. to view his pictures. Henry, surprised and delighted, exclaimed: 'Is the artist still alive, and is he to be had for money?' More presented H. to the king, who took him into his service, and rewarded him liberally. H. continued in England, highly esteemed and fully employed till, 1543, he died of the plague. Though chiefly, and at many periods of his life almost exclusively, a portrait-painter, in this style he stands on a level with the great Italian masters, and takes precedence of all his German contemporaries. His portraits are not ideals, but nature apprehended in its most intellectual features; the execution is rich and perfect. To the earlier part of his career belong his most celebrated paintings, including *The Last Supper*, *The Dance of Death*, several pictures in the Dresden Gallery, two famous portraits of courtesans, etc. At a later period, his execution is slighter, and his style of coloring not entirely free from the mannerism of those Flemish painters who had studied in Italy. Some splendid and able portraits by H., belonging to this period, are in the Louvre at Paris, in the Berlin Museum, at Longford and Windsor Castles. 87 sketches of persons belonging to the court of Henry VIII. by H. are still extant. His *Dance of Death*, the illustrations of the Old Testament, and three sets of alphabet initials, would certainly entitle him to rank as one of

HOLBERG—HOLD.

the first wood-engravers, supposing them to have been not merely designed, but likewise engraved by him. This opinion has, however, been disputed, and the question remains undecided. A selection from H.'s pictures in the Basel library appeared in lithographs (Basel 1829).—See *Lives by Wornum* (Lond. 1867); *Woltmann* (2d. ed. Leip. 1873-76; Eng. trans. 1872); *Cundall* (Lond. 1879).

HOLBERG, *höl-bër'ch*, **LUDVIG**: creator of modern Danish literature, and the earliest, wittiest and best writer of light comedy in Denmark: 1684, Dec. 3—1754, Jan. 28; b. Bergen, Norway, at the period when Norway formed part of the Danish dominions. The ten years which succeeded his appointment, 1718, as prof. of metaphysics in the Univ. of Copenhagen, where he had studied with the original intention of entering the ministry, embrace the most active literary period of his life; for during that time he composed his various satirico-heroic poems and romances, and the greater number of his numerous comedies, still regarded by his countrymen as the best productions of their kind in the Danish language. The creation of a national theatre 1722 by King Frederick IV., who sent for French actors to teach Danish players the art of declamation, had led H. to try his talents in dramatic writing, and with great success. Wealth and honors poured in on him as he advanced in years and he received a patent of nobility 1746.—H. was not merely the greatest Danish writer, but one of the foremost European authors in his time. He first made Danish a literary language, and wrote a library of books. There have been innumerable editions of his works. His serio-comic poem, *Peder Paurs*, passed through more than 20 editions; *Nicolai Klimii Iter Subterraneum* was translated thrice into Danish, ten times into German, and repeatedly into most European tongues. Many of his comedies remain masterpieces. See Georg Brandes's *Ludvig Holberg und seine Zeitgenossen* (Berl. 1885).

HOLCONOTI, n. *höl'ko-nō-tī* [Gr. *holkos*, drawing to one's self, trailing; *nōtos*, the back]: fishes having marsupial pouches.

HOLCUS: see **SOFT GRASS**.

HOLD, v. *hōld* [AS. *healdan*, to keep, to observe: Ger. *halten*; Dut. *houden*; Goth. *haldan*, to hold, to preserve: Icel. *halla*, guard]: to stop; to detain; to have or grasp in the hand; to keep; to keep steady or fast; to contain; to possess; to be true; not to fail; to stick; to adhere; to maintain, as an opinion: N. a grasp, as with the hands; an embrace; power of keeping or seizing; influence; a fortified place; a prison: INT. or IMPERA. be still! forbear! stop! **HOLD'ING**, imp.: N. a tenure; a farm held of a superior; land or house rented; in *Scotch law*, tenure of heritable estate, according to the theory that all the land in Scotland is presumed to be holden of the crown as the superior, and all persons who hold the lands are called vassals. The great proprietors are called crown-vassals, and the little proprietors, who generally hold under the crown-vassals, are called vassals. The chief holding is

HOLD--HOLDERNESS.

called feu-holding (q.v.): see also TENURE: MORTIFICATION: BURGHS. HELD, pt. and pp. *hēld*, did hold. HOLD'ER, n. *-ēr*, one who possesses anything; a tenant. HOLD'FAST, n. *-fāst*, a long nail with a catch or hook. To HOLD BACK, to restrain; to refrain from doing business. To HOLD FORTH, to offer; to put forward; to harangue. To HOLD IN, to restrain; to restrain one's self. To HOLD OFF, to keep at a distance. To HOLD ON, to continue; to proceed. To HOLD OUT, to propose or offer; to yield not; to last or endure. To HOLD TRUE OR GOOD, to be a fact. To HOLD TOGETHER, to remain in union. To HOLD UP, to raise; to sustain or support; to continue fair, as the weather. To HOLD ONE'S OWN, to keep one's ground. To HOLD WITH, to coöperate with; to agree with; to adhere to.—SYN. of 'hold, v.': to grasp; gripe; clutch; retain; consider; regard; think of; receive; defend; have; suspend; fix; save; confine; continue; solemnize; celebrate; conserve; manage; maintain; prosecute; stand; last; endure; refrain; —of 'hold, n.': gripe; seizure; support; catch; custody; power; fortress.

HOLD, *hōld* [Dut. *holte*, a cavity—from *hol*, hollow, a hole: Scot. *how*, hollow]: the interior cavity of a ship not inhabited or set aside for passengers; the space where the cargo is stored: that interior compartment of a vessel throughout her length which is nearest to the keel. From the lowermost deck it extends to the very bottom of the ship; it is always below the water-line, and dependent on the hatchways for ventilation and what little natural light it obtains. In merchant vessels, the greatest portion of the cargo is stored in the hold; in men-of-war, it contains the bread-room, filled with provisions, the water-tanks for the supply of the ship's company, and almost all miscellaneous stores, such as spare masts, sails, blocks, etc. For this latter purpose, the hold is subdivided into several sections by bulk-heads. The *after-hold* lies abaft the mainmast, the *main-hold* just before the same mast, and the *fore-hold* is from the bow nearly to the main hatchway.

HOLDEN, *hōl'den*, EDWARD SINGLETON, LL.D: astronomer: b. St Louis, 1846, Nov. 5. He graduated in science at Washington Univ. 1866, and the U. S. Milit. Acad. 1870; became asst. prof. of philosophy at West Point 1871, and instructor in engineering 1872; resigned from the army and was appointed prof. of mathematics in the navy 1873; asst. to Prof. Simon Newcomb; planned the telegraph time-ball in New York; appointed prof. of astronomy in the Wis Univ. and director of the Washington Observatory 1881; resigned from the navy 1882; was pres. of the Cal. Univ. 1883-8; director of the Lick Observatory 1888-98; then appointed astronomer of the Smithsonian Institution. He has published a large number of scientific and astronomical works.

HOLDERNESS, *hōld'ēr-nēs*: a Wapentake (q.v.) district in the East Riding of Yorkshire, England, between the North Sea and the estuary of the Humber. Its three divisions (middle, north, and south) contain 44 parishes.

HOLDING—HOLIDAY.

HOLDING, a. *hōld'ing* [see **HOLD** 1]: in *OE.*, tenacious; sticky: N. burden or chorus of a song.

HOLDING O'VER: in English law, and similarly in the laws of most of the states of the Union, the refusal to quit by a tenant, after a regular notice to quit, or at the end of his term. In such a case, the tenancy is held to be renewed on the same terms from year to year, if the landlord chooses not to enforce the quitting; but if the tenant himself gave the notice to quit, or the landlord demands possession at the expiration of his notice, and then the tenant refuses to quit, he is thereafter liable to double rent, or double value according as the notice to quit came from the tenant or the landlord.

HOLE, n. *hōl* [*AS.*, *Dut.*, and *Icel.* *hol*; *Ger.* *hohl*, hollow: *Ger.* *höhle*, a cave]: an opening in or through a solid body; an excavation in the ground; a perforation; a cavity; a mean place or habitation; a means of escape: V. to dig or make a hole in; to drive into a hole or bag, as in billiards. **HOL'ING**, imp.: N. in *coal-mining*, cutting under a seam of coal so as to deprive it of support and facilitate its falling down. **HOLED**, pp. *hōld*. **HOLE AND CORNER**, special and private to promote party ends or some disreputable object, as a *hole-and-corner meeting*.—**SYN.** of 'hole, n.': excavation; concavity; hollow; aperture; interstice; pit; cave; den; cell; rent; fissure; crevice.

HOLED-STONES, n.: in *anthrop.*, name given to a peculiar kind of prehistoric stone monument, presumably sepulchral, occurring in Great Britain, France, Cyprus, and India. The size of the hole varies considerably, some being no larger than a half crown, others affording a passage for the human body. Their purpose is unknown. Fergusson speaks of the peculiarly binding nature of an oath sworn by persons joining hands through a holed-stone at Stennis; in Scotland libations are poured through holed-stones in honor of Brownie, the supposed guardian of bees; local superstition ascribes a curative property to the Men-an-tol, near Penzance, and people still creep through it in the hope of being cured of rheumatism. It has been suggested that this stone may have been connected with sun-worship.

HOLER, n. *hōl'ēr*: in *mining*, one who undercuts a coal-seam for two or three feet, and then by driving in wedges breaks away the portions that have been holed.

HOLI, or **HOLEE**, n. *hō'lē*, or **HOOLI**, *hō'lē* [*Mahratta Holi*, the festival so called]: the great Hindu spring festival, commencing on the full moon of the month Phalgun and lasting five days. It is meant to commemorate the gambols to which the god Krishna was addicted in his youth. It is the saturnalia of the Hindus.

HOLIBUT: see **HALIBUT**.

HOLIDAY, n. *hōl'ī-dā* [*holy* and *day*: comp. *Dut.* *hey-ligh-dagh*, a sacred day (see **HOLY**)]: day of freedom from labor; day of joy and gayety: **ADJ.** pertaining to a festival; gay. In *law*, H. means a day appointed by the civil authority for general public observance. The appointment

HOLIDOM—HOLKAR.

is through legislative act or executive recommendation. There is no settled rule in the United States as to what shall be such days; but usually they include Washington's Birthday (Feb. 22), Decoration Day (May 30), Independence Day (July 4), and Christmas Day (Dec. 25); beside days of annual Thanksgiving (or of Fasting) as govt. may appoint. In some states Good Friday is made a legal H. Other holidays may be observed in public offices and courts of law. When a bill of exchange falls due on a Sunday, payment must be made the day previous. If it falls due on any of the bank holidays, the bill is payable the day after. As a general rule, and in most respects, no sect, nor any court or public body, has any power whatever to declare a holiday which has any legal effect, or which can bind the public or the rights of third parties. Nothing but an act of the government has that effect.

HOLIDOM, n.: in *OE.*, a more modern spelling for **HALIDAM**, which see.

HOLILY, ad. *hō'li-lī* [from **HOLY**, which see]: with sanctity; piously; in *OE.*, inviolably.

HOLINESS, n. *hō'li-nēs* [from **HOLY**, which see]: freedom from sin; moral goodness; piety; purity; sacredness; a title of the pope.—**SYN.**: devotion; religiousness; godliness; sanctity; righteousness.

HOLING, n.: see under **HOLE**.

HOLINSHED, or **HOLLINSHED**, *hōl'inz-hēd*, **RAPHAEL**: English chronicler: b. in the early part of the 16th c.; died between 1578–82; of a Cheshire family. The work by which he is remembered is entitled *The Chronicles of Englande, Scotlande, and Irelande* (2 vols. fol. Lond. 1577). This edition—the first—is known as the 'Shakespeare' edition, from the fact of its having supplied the great dramatist with materials for his historical plays. It contained some passages disagreeable to Queen Elizabeth, which were omitted in the second edition 1587. A modern edition, 6 vols., was published 1807–8, with the 'disagreeable passages' restored. **H.**, though the principal, was not the only author of these *Chronicles*. He was assisted in his labors, among others, by William Harrison, who wrote the historical descriptions of the island of Britain; and by Richard Stanihurst, who contributed an account of the condition of Ireland, to which John Hooker added the 'Conquest of Ireland' (a translation from the Latin of Giraldus Cambrensis). **H.** has always been a favorite with black-letter scholars, and has been freely used by modern historians.

HOLKAR, *hol'kēr*: title of the Maharajah of Indore (q.v.), long vested in a powerful Mahratta family. The founder of the family was Mulhar Rao Holkar (1693–1768, b. in the Deccan). His last successor dying without heirs, the E. India Company assumed the right of nominating Mulkerji Rao Holkar, who was educated under the auspices of the British govt., and who has shown great ability since he assumed the reins of government 1852. On the breaking out of the mutiny 1857, he took the field in

HOLLA—HOLLAND.

support of the British, but the refractory behavior of his troops prevented his rendering any effective assistance. See **INDORE**.

HOLLA, n. *höl'ă*: see **HOLLO**.

HOLLAND, n. *höl'länd* [Dut. *hol*, hollow, and *land*—*lit.*, the low-lying land]: fine unbleached linen first manufactured in Holland. **HOL'LANDS**, n. plu. *-lândz*, Dutch or a superior kind of gin (see **GIN**). **HOL'LANDER**, n. a Dutchman.

HOLLAND, *höl'land*: a name frequently applied to the kingdom of the Netherlands (q.v.), though in the strictest sense it is applicable only to the provinces of North and South Holland (q.v.).

HOL'LAND, Sir **HENRY**, Bart., M.D. F.R.S., D.C.L. LL.D., etc.: 1788, Oct. 27—1873, Oct. 27; b. Knutsford, Cheshire: eminent physician. He received his professional education in London, and subsequently at the Univ. of Edinburgh, where he graduated M.D. 1811. He spent two or three years in e. Europe; and 1815, after his return to England, published *Travels in Albania, Thessaly, etc.*, in a 4to vol. He settled in London, and soon rose to eminence in his profession. In 1828, he was elected a fellow of the Royal College of Physicians, a distinction at that time very rarely conferred on a Scottish M.D. In 1840, he was appointed physician-in-ordinary to the prince consort, and 1852, physician-in-ordinary to the queen. In the following year he was made a baronet. In 1856, the Univ. of Oxford conferred on him the honorary degree D.C.L., and he likewise received the degree LL.D. from Harvard Univ. In 1840, he published a vol., *Medical Notes and Reflections*, consisting of 34 essays, which has passed through several editions. In 1852, his *Chapters on Mental Physiology* appeared, expansions of those essays in his former work which treated of 'that particular part of human physiology which comprises the reciprocal actions and relations of mental and bodily phenomena.' His *Essays on Scientific Subjects* (1862), relating to many of the most profound subjects in physics, show that if his special studies had taken a different direction, he would have attained fame as a natural philosopher. The *Recollections of Past Life* he published 1871.

HOL'LAND, Lord, **HENRY RICHARD FOX, VASSALL-HOLLAND**, third baron, F.R.S. English statesman: 1773, Nov. 21—1840, Oct. 22; b. Winterslow House, Wilts; nephew of Charles James Fox; descended from Henry Fox, first baron, sec. of state to George II. H. succeeded to the title on the death of his father, the second baron, 1774. He went to Eton, thence to Christ Church. He was trained for public life by his celebrated uncle, Charles James Fox, and made his first speech in the house of lords 1798, Jan. After the death of Mr. Fox, H. held the post of lord privy seal in the Grenville ministry for a few months. He then shared the long banishment of the whigs from the councils of their sovereign. During this long and dreary interval, H., to use the language of Macaulay (who has paid an elo-

HOLLAND.

quent tribute to his memory), was the 'constant protector of all oppressed races and persecuted sects.' He held unpopular opinions in regard to the war with France, and signed a protest against the detention of Napoleon at St. Helena. On the other hand, he labored to ameliorate the severity of the criminal code; made manful war, though a W. India planter, on the slave trade; threw his whole heart, though a landowner, into the struggle against the corn laws; and though by rank and breeding an aristocrat, labored incessantly to extend and confirm the rights and liberties of the subject. In 1830, he became chancellor of the duchy of Lancaster, and a member of the reform cabinet of Earl Grey, and these posts he held also in the Melbourne ministry. He died at Holland House, Kensington. In his ample person and expressive features, he resembled his celebrated uncle.

HOLLAND, *hōl'and*, JOSIAH GILBERT, M.D.: 1819, July 24—1881, Oct. 12; b. Belchertown, Mass.: author and poet. He graduated at the Berkshire Medical College, Pittsfield, Mass., 1844, practiced a short time in Springfield, Mass., taught school in Richmond, Va., was supt. of public schools in Vicksburg, Miss., and became editorially connected with the *Springfield Republican*, Mass. 1849. He followed daily journalism till 1866, and as editor and part owner started *Scribner's Monthly* 1870, which became *The Century* 1881. Having removed to New York, he was elected a member of the board of education of that city 1872, and during part of his service was its pres.; and he was also chairman of the board of trustees of the College of the City of New York several years. H. began his literary career soon after graduation by contributing several articles to the *Knickerbocker Magazine*, and for six months conducted a literary paper of his own. While on the *Springfield Republican* he wrote a series of popular social and domestic essays, and published his first book *History of Western Massachusetts*, 2 vols. (1855). This was followed by his first story *The Bay Path: a Colonial Tale* (1857). About this time he began another series of essays, *Timothy Titcomb's Letters to Young People, Married and Single*, which was very popular and composed his third book (1858). The same year he published *Bitter Sweet: a Poem in Dramatic Form*. In 1865 he brought out a popular *Life of Abraham Lincoln*, 1867 *Kathrina: Her Life and Mine in a Poem*; and 1868 made a tour of Europe. Beside the above he published *Gold Foil* (1859), *Miss Gilbert's Career* (1860), *Lessons in Life* (1861), *Letters to the Joneses* (1863), *Plain Talks on Familiar Subjects* (1865), *The Marble Prophecy, and Other Poems* (1872), *Arthur Bonnicastie, and Garnered Sheaves* (1873), *The Mistress of the Manse* (1874), *The Story of Seven-oaks* (1875), and *Nicholas Minturn* (1876). All his works were of the highest moral tone, and many of them obtained very great popularity.

HOL'LAND, NEW: former name of the island or continent of Australia (q.v.).

HOL'LAND, NORTH: province of the kingdom of the

HOLLAND—HOLLEY.

Netherlands, bet. $52^{\circ} 10'$ and $53^{\circ} 18'$ n. lat., $4^{\circ} 30'$ and $5^{\circ} 20'$ e. long.; 1,050 sq. m. Pop. (1901) 1,001,799. North H. consists of a peninsula joined to the mainland at its s. extremity, and of the islands of Wieringen, Texel, and Vlieland, at its n. extremity. It is bounded w. by the German Ocean, and e. by the Zuider Zee. The surface is marshy, and in many places below the level of the sea, from whose encroachments it is protected by dunes and dikes, while canals intersect and drain it in every direction. The principal river is the Amstel. The canal from Amsterdam to Nieuwediep is an important water-way, though now superseded (for large ships) by one through the peninsula, opened 1876, Nov. 1. The Haarlem Lake (q.v.) has been drained and converted into productive land, with pop. (1874, Dec. 31) of 12,570; but there remain various small lakes or ponds in the marshy districts. The chief towns of the province are Amsterdam, Haarlem, Alkmaar, Zaandam or Saardam (q.v.).

HOLLAND, PARTS OF: see LINCOLNSHIRE.

HOLLAND, SOUTH: province of the kingdom of the Netherlands. between $51^{\circ} 45'$ and $52^{\circ} 20'$ n. lat., and $3^{\circ} 50'$ and $5^{\circ} 10'$ e. long.; 1,162 sq. m., Pop. (1901) 1,194,463. Bounded n. by N. Holland, e. by Utrecht and Gelderland, s. by the Maas, which separates it from Zeeland and N. Brabant, w. by the German Ocean. S. H. comprises the land around the embouchures of the Rhine and Maas, which in its southern portions is divided into several islands—viz., Voorne, Overflackkee, and Goeree, Putten, Ysselmonde, Beijerland, etc. The country is flat and low, and is broken by no elevation beyond the downs, which protect it from the sea. Streams and canals intersect it in all directions, and it abounds with lakes and with *polders*, or lands that have been recovered from the sea or lakes by draining. One of the most noted of these is the Biesbosch, land recovered from a marshy lake which was formed by the terrible inundation of 1421. The chief rivers are the Old Rhine, the Yssel, Lek, Maas, and Merwede. The principal towns of S. H. are the Hague, Leyden, Rotterdam, Dordrecht, Gorinchem, Brielle, Gouda, Delft, and Schiedam (q.v.). The two provinces of Holland rank among the most populous districts of Europe, and their inhabitants are distinguished for industry and habits of cleanliness. The rearing of cattle, of which there are more than a million in N. and S. Holland, and the preparation of butter and cheese, are principal industries in the rural districts. Alkmaar in N. Holland, and Gouda in S. H., are the great centres of the cheese-trade. In 1874, the cheese sold at Alkmaar weighed 8,705 cwts. The provinces of Holland have the largest share of the national commerce and wealth.

HOLLEY, *hól'li*, ALEXANDER LYMAN, LL.D.: 1832, July 20,—1882, Jan. 29; b. Lakeville, Conn.: metallurgist and civil engineer. He graduated in science at Brown Univ. 1853, spent four years as draughtsman and machinist in locomotive-works and machine-shops, contributed more than 200 articles to the *New York Times* and the *American*

HOLLEY.

Railway Review on engineering and mechanical topics 1858-63, went to England to study the Bessemer process of manufacturing steel 1863, established the first American Bessemer plant at Troy, N. Y., 1865; and subsequently planned and built the works at Harrisburg, Pittsburg, Joliet, N. Chicago, and St. Louis, and aided in planning those at Cambria, Bethlehem, and Scranton, in Penn. He was pres. of the American Institute of Mining Engineers 1875, vice-pres. of the American Soc. of Mechanical Engineers and of the American Soc. of Civil Engineers, member of the U. S. board for testing metals, and lecturer on iron and steel manufacture in Columbia College School of Mines. He published a large number of important technical works, and received the degree LL.D. from Brown Univ. 1878.

HOLLEY, hōl' lī, MARIETTA (pen-name, *Josiah Allen's Wife*): born Ellisburg, Jefferson co., N. Y., 1844. In early life, she wrote poetry which attracted attention, and many of her verses were widely copied in this country, and some reprinted in England. Afterward, wishing to help her parents, she commenced writing humorous prose, and quickly achieved a remarkable success. Most of her life has been passed in the town in which she was born. Besides numerous contributions to periodicals, she has written: *Samantha at the Centennial*; *Josiah Allen's Wife*; *My Opinions and Betsey Bobbet's*; *Sweet Cicely* (1885); *Samantha at Saratoga* (1887); *Poems* (1888); *Samantha among the Brethren* (1890); and various other works.

HOLLIDAY—HOLLOW.

HOLLIDAY, *hŏl'î-dā*, BEN: 1819-1887, July 8; b. Bourbon co., Ky.: pioneer. He was an early settler in w. Mo. and Kan.; contractor for army supplies during the Mexican war; engaged in mercantile business in San Francisco and Salt Lake City 1849-52; established the first mail and overland express after the discovery of gold in Cal., covering a large territory with a fast pony service; and subsequently became a Pacific steamship and Nev. mine-owner. From the proceeds of his celebrated Ophir mine, he laid out a grand estate in Westchester co., N. Y., with a \$1,000,000 stone residence, private chapel, and mortuary building. Legal complications reduced his great wealth to a bare competency, and he passed his last years in Portland, Ore. One of his daughters married the French Count de Pourtales and the other Baron de Bussière.

HOLLIDAYSBURG, *hŏl'î-dāz-bérg*: town, cap. of Blair co., Penn.; on a branch of the Pennsylvania railroad and of the Juniata river; 8 m.s. of Altoona. There are several churches, a female seminary, and public schools, two weekly newspapers, national bank (cap. \$50,000), and private bank, foundries, blast-furnaces, rolling-mills, machine-shops, and nail factories. Coal is mined in the vicinity. Pop. (1880) 3,150; (1900) 2,998.

HOLLIS, THOMAS: 1659-1731, Feb.; b. England. He accumulated a fortune in mercantile business in London, and made donations to Harvard College. He founded the H. professorship of divinity there 1721; and a professorship of mathematics and philosophy 1727. Among his gifts to the college were fonts of Greek and Hebrew type, and many books.

HOLLO, or **HOLLOA**, int. *hŏl-lŏ'*, also spelled **HOL'LA**, and **HAL'LO** [F. *holà*, ho there!]: an exclamation used in calling to some one at a distance to stop or wait; a word expressive of surprise: V. to call the attention of some one at a distance: N. a shout; a word of command to stop. **HOLLO'ING**, imp.: **HOLLOED**, pp. *hŏl-lŏd*. **HOLLOA** is a different word from **HALLOO**, which see.

HOLLOW, a. *hŏl-lŏ* [from **HOLE**, which see]: having an empty space within; not solid; deep; not sincere or faithful; not real; false: N. any depression of surface; a cavity; a pit; a groove: V. to dig or scoop out; to excavate: AD. without difficulty, as he carries it *hollow*; without a chance of success, or beyond a doubt, as he was beaten *hollow*—see phrase below. **HOL'LOWING**, imp. **HOL'LOWED**, pp. *-lŏd*. **HOL'LOWLY**, ad. *-lŏ*, in a hollow manner; dishonestly; insincerely. **HOL'LOWNESS**, n. state of being hollow; insincerity; deceit. **HOLLOW-HEARTED**, insincere; treacherous. **HOLLOW SQUARE**, in a *body of foot*, soldiers drawn up in the form of a square with an unoccupied space in the middle. **HOLLOW-EYED**, having the eyes sunk in the head. **I BEAT HIM HOLLOW**, a probable corruption of the phrase 'I beat him wholly,' that is, 'completely.'—**SYN.** of 'hollow, n.': concavity; excavation; cavern; den; hole; bore; opening; orifice; perforation; passage; canal; hollowness;—of 'hollow, a.': vacant; empty; concave;

HOLLOW-WARE.

sunken; low; faithless; deceitful; insincere; dishonest; treacherous; hollow-hearted.

HOLLOW-WARE: trade term, for such common iron utensils as are hollow, e.g., caldrons, saucepans, kettles, etc. There are two classes of iron goods so-called—viz., cast-iron H.-W. and wrought-iron H.-W. Both include cooking and other vessels for domestic use, and comprise also some other articles, such as coffee-mills, which are molded and finished in a similar way. Wrought-iron H.-W. is made largely by the process of stamping (q.v.), but a great deal is made by the older way of joining pieces together. Vessels of this kind not intended for cooking are generally coated with zinc, while those for cooking have usually a coating of tin. Both metals are put on the iron by immersion. There is also a process in use for coating the surface with silicious enamel, described below. Since the introduction of these methods of protecting and beautifying the surface of iron, domestic vessels of this metal have greatly taken the place of those of copper and brass.

Cast-iron H.-W. is finished in three ways—some of it is enamelled, some tinned, and some of it is left *black*, or untinned; but there is comparatively little of the last now used. The process by which tinned H.-W. is made was patented by Jonathan Taylor, a Birmingham workman, 1779. It is conducted as follows: A vessel, such as a saucepan or goblet, is cast in a mold prepared in the ordinary way from an iron or a brass pattern: see **FOUNDING**. The vessel is then annealed, to soften the cast-iron preparatory to turning, and such articles are then turned quite smooth on the inside, by means of a common lathe when they are circular and by an oval lathe when they are oval like fish-pans, a workman holding and directing the tool in both cases. Self acting lathes have been tried, but hitherto without saving in the cost. The operation of tinning follows, and is performed by the workman pouring small quantities of melted tin on the inside of the vessel, which he rubs on with a piece of cork, gradually going over the whole surface. A little sal-ammoniac is thrown in during the process to make the tin adhere. Handles of malleable iron are then put upon such vessels as require them, and the finish is given by coating the outside with a black varnish dried in a stove. The covers of saucepans are made of tin-plate, those for tea-kettles of cast-iron.

For enamelling of cast H.-W. a patent was taken out in England as early as 1799; but the process then introduced, in which the enamel contained lead and tin, was ultimately abandoned. A subsequent patent has been more successful. The enamel is applied to the cast-iron in two coatings, one of which forms the body of the enamel, and the other the glaze, both being free from metallic oxides. It is especially desirable to avoid the oxide of lead, as it does not resist the action of acid substances in culinary operations. As iron, in common with most metals, differs from any vitreous enamel in the rate of its expansibility by heat, there is of course a difficulty in securing the permanent adhesion of the two substances, especially with such

HOLLY.

an article as a cooking-vessel. In cast-iron vessels the difficulty has been practically overcome.

With regard to the comparative merits of the different varieties of H.-W., there is no doubt that the kind made of enamelled cast-iron is, on the whole, the best for cooking purposes, though it is about one-fifth dearer than when merely tinned, and is, moreover, not liked by cooks for any but small-sized vessels, on account of its being somewhat heavy. Enamelled wrought-iron cooking-vessels are much lighter to handle, but upon them the enamel does not stand nearly so well, probably because the comparatively rapid heating of the thin iron of which they are made, more rapidly destroys the adherence of the two substances. A great deal of cast-iron tinned H.-W. is now made without being turned, an omission easily detected.

HOLLY, n. *hōllī*, called also the HOLM [AS. *holegn*; OE. *hollen*; W. *celyn*; Gael. *cuilionn*, holly], (*Ilex*): genus of trees and shrubs of nat. ord. *Aquifoliaceæ*, natives chiefly of temperate climates; with evergreen, leathery, shining, and generally spinous leaves; small flowers which have a 4-5-toothed calyx, a wheel-shaped 4-5-cleft corolla, 4 or 5 stamens, and the fruit globose and fleshy, with 4 or 5 stones (*nuts*). The COMMON H. (*I. aquifolium*), the only European species, and native also of parts of Asia, is a well-known ornament of woods, parks, and shrubberies in Britain, the stiffness of its habit being so compensated by the abundance of its branchlets and leaves, as to make it one of the most beautiful evergreens. It attains greater size and luxuriance in the northern than in the southern parts of its geographic range, often appearing in the former as a tree 20 to 50 ft. high, while in the latter it is generally a mere bush. It prefers light soils. There are numerous varieties of H., produced, or perpetuated, by cultivation, exhibiting great diversity in the leaves, of which the *Hedgehog H.* may be mentioned as extremely sinuous and spinous, while others are prized for their color, golden, silver-blotched, etc. The flowers of the H. are whitish, axillary, nearly umbellate; the fruit small, scarlet, rarely yellow or white. The abundance of the fruit adds much to the ornamental character of the tree in winter, and affords food for birds; but to man it is purgative, emetic, and diuretic, and in larger quantities poisonous. The leaves are inodorous, have a mucilaginous bitter and somewhat austere taste, and have been used medicinally in cases of gout and rheumatism, as a diaphoretic, and also as an astringent and tonic to correct a tendency to diarrhea, etc. The leaves and small branches, chopped, are sometimes used for feeding sheep in severe winters. The root and bark are emollient, expectorant, and diuretic. Bird-lime (q.v.), is made from the inner bark. The wood is almost as white as ivory, very hard and fine-grained, and is used by cabinet-makers, turners, musical-instrument makers, etc., and sometimes for wood-engraving. Handles of tools and handles of metal tea-pots are often made of it. The H. is often planted for hedges, as it bears clipping well, and makes an excellent fence. A H.

HOLLYHOCK—HOLM.

hedge may either be kept low, or allowed to grow to the height of 20 or 30 ft. In the gardening of former days, hollies were often clipped into fantastic shapes.—The name H. is said to be derived from the use of the branches and berries to decorate churches at Christmas, from which the tree was called Holy Tree.—Numerous other species of H. are found in N. America, most of them in swampy situations; among these are the Inkberry, and the American Black Alder or Winterberry, also a species nearly resembling the English. Others are found in S. America, Nepaul, Japan, and other parts of the world.—MATÉ (q.v.), or *Paraguay Tea*, is the leaf of a S. American species of H. (*I. Paraguensis*).

HOLLYHOCK, n. *hōl'li-hōk* [AS. *hoc*; W. *hocys*, mallows, and *holly*—so called from being supposed to have been first brought from the Holy Land], (*Althæa rosea*): plant of nat. ord. *Malvaceæ*, commonly referred to the same genus with the Marsh Mallow (q.v.). It has a tall, straight, hairy stem; heart-shaped, crenate, wrinkled, 5-7-angled leaves, and large axillary flowers, almost without stalks; the leaves diminishing into bracts, and the upper part of the stem forming a spike; the petals hairy at the base. The H. is a native of India, s. Europe, etc., is in almost every garden in India, and has been much cultivated in gardens in Britain from a very early period. At present, it is a favorite flower in Britain and America; and varieties, the result of cultivation, are very numerous. It varies much in color of flowers, and double and semi-double varieties are common. It is an autumnal flower, continuing till the frost sets in. It is a biennial or perennial plant. The stem rises to a height of 8-15 ft., unbranching, or nearly so. The fibres of the plant have been made into yarn, but it is not yet certain if it is really valuable for cultivation on this account, or for the manufacture of paper. It is probable that it might be cultivated with advantage to afford green fodder for cattle, which are very fond of its leaves, and the leaves are produced in great abundance if the plant is prevented from flowering. The flowers are mucilaginous and demulcent, and are sometimes used like those of mallows and marsh mallows. The leaves yield a fine blue dye.—The CHINESE H. (*A. Chinensis*) is an allied species.

HOLLY SPRINGS: town in n. Mississippi, on the Central railway, 25 m. s. of its junction with the Memphis and Charleston line. It is the principal town in n. Mississippi, and contains several churches, four academies, a bank, and two or three newspapers, with a large trade in cotton and merchandise. Pop. (1880) 2,370; (1900) 2,815.

HOLLY WA'TER-WORKS: see WATER SUPPLY.

HOLM, n. *hōlm* or *hōm* [AS. *holen*, holm or alder-tree (see HOLLY)]: the evergreen oak; the *Quercus ilex*, ord. *Cupulifēræ*, or *Corylācæ*; also a name given to the *holly*.

HOLM, n. *hōlm* or *hōm*, spelled also HOLME—generally when part of a compound word [Norw. *holm*, a small island: Icel. *holmr*, an islet: Dan. *holm*, a holm, a quay:

HOLMES.

Dut. *holm*, a sand-bank: AS. *holm*, the deep sea]: a slight elevation, or a rising ground; a river islet; generally applied to low flat rich land on the banks of a river.

HOLMES, *hōmz*, OLIVER WENDELL, M.D., LL.D.: physician, author: 1809, Aug. 29–1894, Oct. 7, b. Cambridge, Mass., 3d; son of Abiel Holmes, D.D. (1763–1837), who for 40 years was pastor of the First Congl. Church, Cambridge. H. graduated at Harvard College 1829, and entered on the study of law, but soon adopted the profession of medicine. He studied in Europe, graduated M.D. 1836, and two years afterward was appointed prof. of anatomy and physiology in Dartmouth College; and 1847, was transferred to the same chair at Harvard, the medical department of which is at Boston. This post he resigned 1882. On the establishment of the *Atlantic Monthly*, 1857, he became one of its first contributors, and has written for it ever since—many of his most popular works being first published in that magazine. He was distinguished as an anatomist and for his researches in microscopy and auscultation; but beyond medical and scientific circles he is revered for his voluminous writings, which comprise nearly every form of literature. Whether he allowed free play to his quaint humor, deep pathos, or sturdy practical wisdom, he wrote and spoke in simple language and with a remarkable charm of presentation. His poems and addresses on special occasions—usually familiar or semi-confidential in tone—are widely acknowledged as models of English linguistic purity. Though for many years a popular lyceum lecturer, his choicest works in prose and verse were originally written for college commencements or college literary societies. He began writing verse while a Harvard student, contributing to his class paper, and reciting an original poem at commencement. The year after his graduation, under the inspiration of a movement to break up the famous old frigate *Constitution*, he wrote the thrilling protest *Old Ironsides*, and while studying law many humorous poems, e.g. *Evening by a Tailor* and *The Height of the Ridiculous*. He published his first collection of poems (45) in the year of his graduation in medicine. In the next two years he gained three Boylston prizes with medical essays (pub. Boston 1838). From that time till he joined the *Atlantic Monthly* staff he published an edition of Marshall Hall's *Theory and Practice of Medicine*, in conjunction with Dr. Jacob Bigelow (1839), *Lectures on Homœopathy and its Kindred Delusions* (1842), *Report on Medical Literature*, in the *Transactions* of the National Medical Assoc. (1848), and *Puerperal Fever as a Private Pestilence* (1855). His other scientific works are *Currents and Counter-Currents in Medical Science* (1861), *Border-Lines in some Provinces of Medical Science* (1862), and *Medical Essays*, a re-issue of some of the preceding (1883). Of his succeeding volumes of poetry *Urania* appeared 1846. *Astræa: the Balance of Illusions* 1850, *Songs in Many Keys* 1861, *Songs of Many Seasons* 1875, and *The Iron Gate* 1880. His first contribution to the *Atlantic Monthly* was a series of social, colloquial essays, interspersed with poems, en-

HOLMES—HOLOGRAPH.

titled *The Autocrat at the Breakfast Table* (in book form 1859). This was followed by a similar series, *The Professor at the Breakfast Table* (book 1869), and after an interval of nearly a quarter of a c., by the concluding series, *The Poet at the Breakfast Table* (book 1872). Two novels also were published during this period, *Elsie Venner: a Romance of Destiny*, 2 vols. (1861), and *The Guardian Angel*, 2 vols. (1868). A collection of magazine essays, *Soundings from the Atlantic*, was published 1864, *Mechanism in Thought and Morals* 1871, memoirs of John Lothrop Motley 1879 and Ralph Waldo Emerson 1884, *A Mortal Antipathy* 1885, *Hundred Days in Europe* 1887; *Over the Teacups* (1891).

HOLMES, OLIVER WENDELL, Jr.: lawyer: b. Boston, 1841, Mar. 8: son of OLIVER WENDELL H., M.D., LL.D. He studied at Harvard Univ., entered the Union army as lieut. 20th Mass. inf., 1861; was wounded at Ball's Bluff, Antietam, and the second Fredericksburg; promoted capt., on Gen. Sedgwick's staff and the gen. staff of the 6th corps; mustered out of the service 1864, June. After a European tour he studied law, was admitted to the bar 1866, and appointed professor in the Harvard Law School and a justice of the Mass. supreme court 1882; was made chief justice of the Mass. supreme court, 1899, Aug. 2; and associate justice of the U. S. Supreme Court, 1902, Aug. 11. He published an edition of Kent's *Commentaries* (1873), and *The Common Law* (1881).

HOLOBLASTIC, a. *hōl'ō-blās'tīk* [Gr. *holos*, whole; *klas-tos*, a sprout, a bud]: applied to an ovum whose vitellus becomes entirely segmented: see **MEROBLASTIC**.

HOLOCAN'THUS: genus of fishes, of family *Chaetodontidae* (q.v.); remarkable for the great beauty and symmetry of their colors, and for excellence as food. They have the very compressed form and other general characters of the *Chaetodontidae*, a single dorsal fin, and a large spine on the gill-cover. They are natives of the seas of warm climates. *H. imperator* is one of the most esteemed fishes of the E. Indies, rivalling the salmon in flavor. Its greatest size is about 15 inches long; its color is deep blue, with numerous narrow bands of orange; the pectoral fins are black, the tail is bright yellow. It is known in parts of the East as the *Emperor of Japan*.

HOLOCAUST, n. *hōl'ō-kawst* [Gr. *holos*, whole; *kaustos*, burnt: F. *holocauste*]: sacrifice or offering the whole of which was consumed by fire; a burnt-offering: see **SACRIFICE**.

HOLOCEPHALI, n. plu. *hōl'ō-sēf'ā-lī* [Gr. *holos*, whole; *kephalē*, the head]: in zool., a sub-order of the Elasmobranchii, *ē-lās'mō-brāng'kī-ī*, comprising the Chimærae.

HOLOFER'NES: see **JUDITH**.

HOLOGRAPH, n. *hōl'ō-grāf* [Gr. *holos*, whole; *graphō*, I write]: deed or will written wholly by the hand of the grantor or testator. **ADJ.** applied to a written document or letter, written as well as signed by the same person; also

HOLOHEDRAL—HOLOPTYCHIUS.

HOL'OGRAPH'IC, a. -*ik*. In Scotland, and in France, considerable privileges pertain to legal documents thus written: such exceptional privileges are unknown in England and in the United States.

HOLOHEDRAL, a. *hōl'ō-hē'drāl* [Gr. *holos*, whole; *hedra*, a seat]: in *min.*, completely developed; symmetrical; the opposite of **HEMIHEDRAL**.

HOLOMETABOLA, n. *hōl-o-mě-tāb'o-la* [prefix *holo-*; Gr. *metabolē*, change]: in *entom.*, sub-class of insects consisting of those which undergo a complete metamorphosis, the larva, pupa, and perfect insect being all unlike each other.

HOLOMETABOLIC, a. *hōl'ō-mēt-ā-bōl'ik* [Gr. *holos*, whole; *metabolē*, change]: applied to insects which undergo a complete metamorphosis.

HOLOMETER, n. *hōl-ōm'ē-tēr* [prefix *holo-*; Gr. *metron*, a measure]: instrument for taking all sorts of measurements; a pantometer.

HOLOPHANEROUS, a. *hōl-o-fān'ēr-ūs* [prefix *holo-*; Gr. *phaneros*, visible]: term applied to the metamorphoses of insects when they are complete.

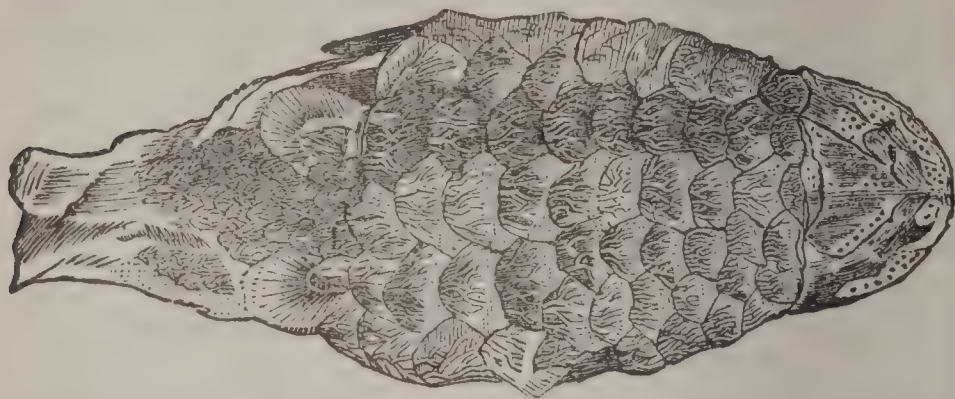
HOLOPHOTAL, a. *hō-lōf'ō-tāl* [Gr. *holos*, whole; *phōs*, light, *phōtos*, of light]: applied to reflectors which throw back the rays of light in one unbroken mass without perceptible loss.

HOLOPHRASE, n. *hōl'ō-frāz* [Gr. *holos*, the whole; *phrazō*, I tell]: in any language, a whole phrase, or long number of syllables, employed to express a simple idea, which in English is expressed by one word. **HOLOPHRASTIC**, a. *hōl'ō-frās'tik*, applied to those languages which have numerous syllables in a single word, often as many as fourteen.

HOLOPTYCHIUS, n. *hōl'ōp-tīk'ē-ūs* [Gr. *holos*, whole entire; *ptūchē*, a wrinkle]: remarkable genus of fossil ganoid fishes, so named from the wrinkled appearance of the enamelled scales. They were of large size, some species probably reaching the length of 12 ft. The small head was covered with large tuberculated plates, like those of the crocodile, and the body was completely encased in large scales, more like those of a reptile than a fish. Some scales have been found measuring 3 inches in length by $2\frac{1}{2}$ in breadth, and a full eighth of an inch in thickness. They were composed internally of porous bone, in numerous layers, arranged alternately at right angles to each other, and the outside was covered with a bright glossy corrugated enamel. The spines of the fins were large and hollow; the bones partially ossified; the centre remained in its original cartilaginous condition, and consequently appears hollow in the fossil. The jaws were covered with hard enamel instead of skin, and were furnished with a double row of teeth; the outer row, placed along the edge of the mouth, were small and quickly set; the inner range widely set, and very large, at least 20 times the bulk of the others. The specimen figured was obtained on the Firth of Tay, Scotland;

HOLOSERICEOUS—HOLOTHURIA.

it is now in the British Museum collection. It is 12 inches across by two ft. and a half long without the tail, which is wanting. It is nearly perfect, lying on its back, with the scales and the ventral fins in their original position.



Holoptychius Nobilissimus (Agass.).

The genus is peculiar to the Old Red Sandstone and Carboniferous Measures; eight species being found in the former, and nine in the latter. The name *H.* is now generally confined to the fossils of the Old Red Sandstone, and that of the *Rhizodus*, which Owen applied to the teeth remains before their connection with the fish was known, has been given to the *Holoptychians* of the Coal Measures, which have the outer row of teeth more robust and obtuse, and the inner set longer, sharper, and more slender than in the older species.

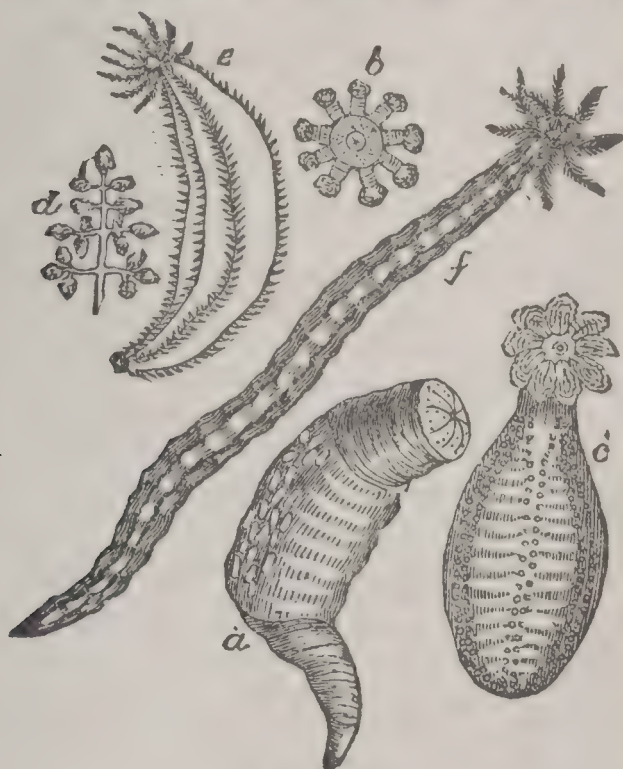
HOLOSERICEOUS, a. *hōl'ō-sēr-īsh'ūs* [Gr. *holos*, whole; *sērīkōs*, L. *sēricus*, silky]: covered with minute silky hairs, best discovered by touch.

HOLOSTOMATA, n. plu. *hōl'ō stōm'ă-tă* [Gr. *holos*, whole; *stōma*, the mouth, *stōmăta*, mouths]: a division of gasteropodous mollusks in which the aperture of the shell is rounded or entire.

HOLOTHURIA, n. *hōl'ō-thū'rī ā* [Gr. *holos*, the whole; *thūriōn*, a little door]: genus of *Echinodermata* (q.v.), the former limits of which are now those of a family, *Holothuridæ*, divided into numerous genera. **SEA-SLUG** and **SEA-CUCUMBER** are popular names of some animals of this family. The *Holothuridæ* have not the covering of calcareous plates characteristic of the more typical *Echinodermata*, but a soft leathery muscular integument, very irritable, and capable of great distention and contraction. Some are almost globose, some so much elongated as to be almost worm-like; but the same individual is often capable of extending itself to several times the length which it has in a state of repose. In locomotion, the body is extended and contracted as by the annelides, but the principal organs of locomotion, as in star-fishes and sea-urchins, are suckers or *Ambulacra* (q.v.), of which there are usually five double rows, while sometimes they are distributed over the whole surface of the body; but some of the species have the suckers developed only on a disk, and the body then presents an upper and an under surface. The radiate structure is most apparent in the mouth, which is surrounded with tentacles,

HOLOTHURIA.

in number always a multiple of five, showing great variety of beautiful forms, and capable of being completely retracted. Little is known of the food of the *Holothuridæ*, which, however, probably consists of small marine animals. Within the opening of the mouth there is a circle of teeth. There is no proper stomach. The intestine is often very complicated. The respiratory organs are near the anus, and consist of branching tubes. The organs of both sexes are found in each individual. The young pass through several stages or transformations, in which they are very unlike their parents; in their first stage, after leaving the egg, they swim vigorously, by means of membraneous expansions of the body. The *Holothuridæ* are capable of most extraordinary reproduction of parts, even of the most important organs. They are found in all seas, but particularly abundant in the Red Sea, and between s. Asia and Australia. The largest European species, *H. (Cucumaria)*



Holothuria:

a, *H. phantapus*; *b*, buccal appendages of *H. phantapus*; *c*, *H. papillosa*; *d*, an isolated branch of the buccal appendages of *H. papillosa*; *e*, *H. cucumis*; *f*, *H. vittata*.

frondosa, is about 12 inches in length, and capable of extending itself to 3 ft. Many species are small, and they are not of pleasing appearance as they usually come under observation, though the expanded tentacles give them beauty in their proper abodes. But many of the tropical species exhibit splendid colors, and are among the creatures which make the bottom of the sea, particularly among coral reefs and islands, gay and brilliant as a garden.

The *Bêche-de-mer* (q.v.), or Trepang, so much esteemed as a delicacy by the Chinese, belongs to this family. HOLOTHURIA, or HOLOTHURIAN, a. pertaining to. HOLOTHURIORIDEA, n. -ἰ-ᾱ́-dē-ā [Gr. *eidos*, resemblance]: an order of Echinodermata.

HOLPEN—HOLSTON.

HOLPEN, pp. of v. *hōl'pn*: in *Scrip.*, an old spelling for *helped*.

HOLST, HERMANN EDUARD VON: historian: b. Fellin, Livonia, Russia, 1841, June 19. He was educated in Dorpat and Heidelberg universities; took a doctor's degree at the latter 1865; settled in St. Petersburg 1866; travelled in Italy, France, and Algeria, and published a political pamphlet for which he was forbidden to return to Russia; removed to the United States and became asst. editor of the *Deutsch-Amerikanisches Conversations-Lexicon* 1869; appointed prof. of history in Strasburg Univ. 1872 and of modern history in Freiburg Univ. 1874; revisited the United States, delivered a course of lectures in Johns Hopkins Univ., and declined a professorship there 1878; and accepted the chair of hist. in Univ. of Chicago 1892. He is author of *The Constitutional and Political History of the United States*, 1750-1833 (American ed. 5 vols., Chicago 1876-85), *Life of John C. Calhoun* (American Statesman series, Boston 1882), and *The Constitutional Law of the United States of America* (Chicago 1887).

HOLSTEIN, *hōl'stin*: formerly a duchy belonging to Denmark, and at the same time a member of the Germanic Confederation; annexed 1866 to Prussia. It is separated from Slesvig on the n. by the river Eyder and the Slesvig-Holstein canal; is bounded e. by the Baltic Sea, the territory of Lübeck, and the duchy of Lauenburg; s. by the Hamburg territory and the river Elbe, which separates it from Hanover; and w. by the North Sea; 3,270 sq. m. The principal rivers, besides the Elbe and the Eyder, are the Stör and the Trave. Of the surface of the land, one-eighth consists of marshes. The central districts of the province are occupied by an undulating plain, varied by low hills, and traversed from n. to s. by a heathy and sandy ridge, from which the land falls away gradually on the e.—where the surface is varied by lakes and fertile well-wooded valleys—and on the west. The soil, with the exception of several tracts of sand and heath, is very fruitful, and most luxuriant in the marshes. The climate and natural productions closely resemble those of similar districts in n. Germany. Salt and lime are the only minerals found. Amber is obtained on the e. coast, and the interior abounds in peat. The manufactures of H. are inconsiderable; agriculture and the rearing of cattle are the chief employments of the people. For the history of H. and its political relations, see SLESVIG. Pop. (1900) 1,387,968.

HOLSTER, n. *hōl'ster* [Dut. *holster*, a case for pistols: AS. *heolster*, a hiding-place—from *helan*, to cover: Icel. *hulstr*, a case or sheath—from *hylja*, to cover]: a leather case for a pistol attached to the forepart of a saddle; frequently covered with wool or fur, to prevent injury to the rider if he is thrown forward upon them. **HOL'STERED**, a. *-stērd*, furnished with holsters.

HOLSTON, *hōl'ston*, RIVER: affluent of the Tenn. river, rising by n. and s. forks in the Allegheny Mountains in Smyth co., Va., uniting near Kingsport, Tenn.; flowing

HOLT—HOLY.

200 m. s.w. to Kingston, Tenn.; and there joining the Clinch river in forming the Tenn. river. It is navigable for steamboats in all seasons to Knoxville and in winter to Kingsport, and is fed by the French Broad, Little Tenn., and Watauga rivers.

HOLT, n. *hōlt* [AS. *holt*, a grove: Icel. *holt*, a copse: Dut. *hout*, a wood]: a wooded hill; a forest; a cover, hole, or other place of security.

HOLT, *hōlt*, **JOSEPH**: lawyer: b. Breckenridge co., Ky., 1807, Jan. 6. He received a collegiate education; began practicing law in Elizabethtown Ky. 1828; removed to Louisville 1832, Port Gibson, Miss., 1835, and Louisville 1842; appointed by Pres. Buchanan commissioner of patents 1857, postmaster-gen. 1859, and (on the resignation of John B. Floyd) sec. of war 1860, Dec.; became judge-advocate-gen. of the army and col. 1862, Sep. 3; promoted brig.gen. and made chief of the bureau of milit. justice 1864; brevetted maj.gen. U.S.A. 1865, Mar. 13; and retired at his own request 1875, Dec. 1. Hed. Aug. 1, 1894.

HOLTZENDORFF, *hōlts'en-dawrf*, **FRANZ VON**: jurist: 1829, Oct. 14—1889, Feb. 14; born in the n. of Brandenburg. Educated for the law, he practiced in the courts at Berlin till 1857, when he became a lecturer on law at the university. He was made prof. there 1861, and was called to Munich 1873. He was known as an author on several branches of law, especially in connection with labors for the reform of penal codes and penal systems. In 1880 he took part in the proceedings of the Social Science Congress at Edinburgh. Among his numerous works, are *Die Deportation als Strafmittel* (1859); *Die Principien der Politik* (1869); *Encyclopädie der Rechtswissenschaft* (2d ed. 3 vols. 1876); *Handbuch des Deutschen Strafrechts*.

HOLTZMANN, *hōlts'mân*, **ADOLF**: 1810, May 2—1870, July 3; b. Karlsruhe: philologist. From 1852 till his death, he was prof. in Heidelberg. His numerous writings relate to classical, Indian, Assyrian, and Germanic subjects; he was at once editor, commentator, and original author. His *Celten und Germanen* (1855), *Altdeutsche Grammatik* (1870), and *Deutsche Mythologie* (1874), are well-known works.—His nephew **HEINRICH JULIUS H.** is one of the representatives of the advanced liberal school in Prot. theology. Born at Karlsruhe, 1832, May 17, he became prof. of theology at Heidelberg 1865, and at Strassburg 1874. *Kanon und Tradition* (1859), and *Die Synoptischen Evangelien* (1863), are among his works.

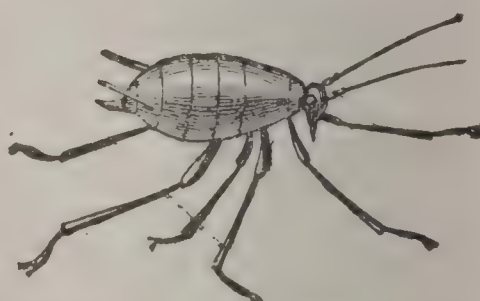
HOLY, a. *hō lī* [Icel. *heilagr*, holy—from *heil*, whole; Ger. *heilig*; Dut. *heylig*, holy—from Ger. *heil*; Dut. *heyl*, health]: pure; good; pious; free from sin and sinful affections; sacred; perfect in a moral sense: consecrated to. **HO'LILY**, ad. *-lī*. **HO'LINESS**, n. *-nēs*, state of having the desires and affections sanctified; the quality of being holy; freedom from sin. **HOLIDAY**, n. *hōl'ī-dā*, a day of joy or amusement, etc.: see **HOLIDAY** (above). **HOLY CITY**, the city which stands most connected as the origin and source of a religious system, as Jerusalem to Jews and Christians.



Hollyhock (*Althaea rosea*).



Holy-water Sprinkler.



Homoptera. — Wingless Aphis or Plant-louse, magnified.



Honeysuckle (*Lonicera Caprifolium*).



Honesty (*Lunaria biennis*), in seed.



Hood for Hawk. Monk's Hood.

HOLY ALLIANCE—HOLY COMMUNION.

HOLY LAND: see **PALESTINE**. **HOLY ONE**, one of the names of the Supreme Being; a name of Christ. **HOLYROOD**, n. *hō'li-rôd*, a crucifix in the R. Cath. Chh. placed over the entrance to the chancel; *hōl'i-rûd*, the royal palace, etc., at Edinburgh (see below). **HOLY OF HOLIES**, n, *hō'liz*, the innermost division of the tabernacle and temple where the ark was kept. **HOLY DAY**, are ligious feast: see **HOLIDAY**. **HOLY OFFICE**, a name for the Inquisition. **HOLY ORDERS**, in *Episcopal Churches*, the several ranks of the ministry. **HOLY THURSDAY**, Ascension day, ten days before Whitsuntide. **HOLY WEEK**, the week before Easter; Passion week, strictly the week before Holy week: see **HOLY WEEK**, below. **HOLY WRIT**, the Sacred Scriptures. **HOLY LAND**, Palestine, the country of the anc. Jews. **HOLY GHOST:** see **HOLY SPIRIT**.—**HOLY-STONE**, a stone used by seamen to scrub and clean the decks of ships: V. to scrub the deck of a vessel with a holy-stone. **HOLY WAR**, a war undertaken with the view of crushing the enemies of the church—usually restricted to one of the crusades.—**SYN.** of 'holy': religious; devout; hallowed; pure; guiltless; irreproachable; consecrated; immaculate.

HOLY ALLIANCE: league formed after the fall of Napoleon by the sovereigns of Russia, Austria, and Prussia, nominally to regulate the relations of the states of Christendom by the principles of Christian charity, but really to preserve the power and influence of the existing dynasties. Most of the other European rulers acceded to it, and the treaty was formally made public in the *Frankfurt Journal*, 1816, Feb. 2. It was in virtue of this league that Austria, 1821, crushed the revolutions in Naples and Piedmont, and that France, 1823, restored absolutism in Spain. Subsequently, both France and England seceded, after which it became a mere *nominis umbra*. A special article of the treaty excluded for ever the members of the Bonaparte family from any European throne.

HOLY COAT OF TREVES: relic preserved with the greatest reverence in the cathedral of Treves, of which city it is esteemed the greatest treasure. It is alleged to be the seamless coat of the Lord Jesus, and to have been discovered in the 4th c. by Empress Helena, in her memorable visit to Palestine, and by her deposited at Treves. The Treves relics were concealed from the Normans in the 9th c. in crypts; but the H. C. was rediscovered 1196, and then solemnly exhibited to the public gaze, which did not take place again till 1512, when Leo X. appointed it to be exhibited every seven years. The Reformation and wars prevented the observance of the festival; but it was attended 1810 by 227,000 persons; and 1844 by still greater multitudes, while miraculous cures were said to be performed. The exhibition of the Holy Coat 1844 led to the secession of the German Catholics from the Church of Rome.

HOLY COMMUNION, SISTERS OF THE: first Prot. Episc. sisterhood organized in the United States, founded by William A. Muhlenberg, D D. in New York 1852, and

HOLY FAMILY—HOLYHEAD.

named after the church of the Holy Communion, which was erected by his sister and of which he became rector 1846. After he had secured the establishment of St. Luke's Hospital in New York (opened 1859), these sisters took charge of its humane work, and also labored among the poor. They are not required to take vows nor to wear a special habit.

HOLY FAMILY: name in art, for every representation of the infant Savior and his attendants. In the early part of the middle ages, when the object in view was to excite devotion, the Virgin and Child were usually the only persons represented. At a later period, Joseph, Elizabeth, St. Anna (mother of the Virgin), and John the Baptist, were included. Some of the old German painters have added the 12 apostles as children and playfellows of the infant Christ, as well as their mothers, as stated in the legends. The Italian school, with its fine feeling for composition, was the first to recognize of how many figures the group must consist, if the interest is to remain undivided, and be concentrated on one figure, whether that figure be the Madonna or the Child. Two masters are pre-eminent in this species of representation—Leonardo da Vinci and Raphael.

HOLY FIRE, in the Church of Rome: light kindled at Easter, by sparks struck from a flint, in remembrance—according to the missal—of Christ as the great corner-stone, and hailed by kneeling ecclesiastics with the words 'Light of Christ' (*Lumen Christi*). The ceremony takes place on Holy Saturday, of which day's service it forms a striking part; and at Rome, it takes place in the presence of the pope himself; all the lights in the chapel having been previously extinguished, to be rekindled at the new fire.—The kindling of the Holy Fire in the Church of the Holy Sepulchre at Jerusalem, at the Easter of the Oriental Church, is represented as miraculous. The Greek and Armenian clergy combine on this occasion, and amidst processions, solemnities, an excited multitude, and scenes disgraceful not only to the name of religion but to human nature, the expected fire makes its appearance from within an apartment in which a Greek and an Armenian bishop have locked themselves.

HOLY GRASS (*Hierochloe borealis*): a grass about 12 inches high, with a brownish glossy lax panicle. It is found in the most northern parts of Britain, and in n. Europe. It has a sweet smell, like that of vernal grass. In some countries, it is strewed on the floors of places of worship on festival-days, whence its name.

HOLYHEAD, *hōl'î-hĕd*: seaport, parliamentary borough, and market-town of N. Wales, county of Anglesea, on a small island of the same name, 24½ m. w.n.w. of Bangor, and 272 m. n.w. of London. Although recently much improved, it is still a primitive, irregularly built town. It is the station of the mail steam-packets to Dublin, distant about 69 m. The harbor of H. is formed by a pier running n.e. from an islet called Salt Island,

HOLYHEAD ISLAND—HOLYOAKE.

The extension of the harbor, begun 1873, was completed 1880; the quay has been lengthened to 4,000 ft. the whole costing more than half a million sterling. The people are employed in the coasting-trade, and in ship-building and rope-making. The fine harbor of refuge incloses an area of about 400 acres, and is protected by a breakwater 7,860 ft. in length. Pop. (1871) 5,916; (1881) 8,543.

HOLYHEAD ISLAND: small island of N. Wales, w. of the island of Anglesea, and forms part of the county of that name. Its greatest length is seven and a half m. and its greatest breadth about three and a half m.: area 9,568 sq. acres; pop. about 10,000. H. I. is separated from Anglesea by a narrow sandy strait crossed by the Holyhead road and the Chester and Holyhead railway, which are formed by embankments or causeways, arched in the centre. The island, which comprises some good pasture-ground for sheep, as well as a proportion of arable land, is mostly rocky and barren. On the n.w. coast are two islets, the N. and S. Stacks, the latter with a lighthouse. The Stacks and the n. coast are hollowed out into magnificent caves, the haunt of sea-fowl.

HOLY ISLAND, or LINDISFARNE, *līn-dīs-fārn'*: small island of England, belonging to the county of Northumberland, about 10 m. s.e. of Berwick-on-Tweed. It measures $2\frac{1}{4}$ miles from e. to w., and $1\frac{1}{2}$ from n. to s. At low water it can be reached by wheel-vehicles, and even by pedestrians dry-shod, but at high water the strait is about $1\frac{1}{2}$ m. wide. The village is finely situated on the s. coast of the island, and is guarded by the castle, built about 1500, and still in good repair. The island is interesting for the ruins of its Benedictine priory. This was built 1093, out of the materials of the ancient cathedral, and was dismantled at the dissolution of the monasteries, when its lands were attached to the cathedral of Durham. Its ruins show that it was a model on a small scale of this cathedral, even to the patterns on the columns. The first church was a rude building erected in the 7th c., under the auspices of Bp. Aidan, and under its shadow a company of monks established themselves under the rule of St. Columba, and grew into the famous priory of Lindisfarne, which, however, always continued subordinate to its bishops. The island became the luminary of the north, the Iona of England. Successive kings added to its buildings, and enriched it with large revenues. Under the rule of St. Cuthbert (q.v.), as prior, afterward as bishop, it reached its greatest glory. The cathedral suffered severely from the ravages of the Danes, and was gradually allowed to fall into ruins, as Durham grew into importance. It was finally pulled down 1093.

HOLY MAID OF KENT: see BARTON, ELIZABETH.

HOLYOAKE, *hōl'yōk*, GEORGE JACOB: reformer: b. Birmingham, England. 1817, Apr. 13. He was educated in the local Mechanics' Institution, tutor of mathematics there, prize author of the 5 degrees, I. O. O. F., founder of a system of 'Secularism.' editor of 30 vols. of *The*

HOLYOKE.

Reasoner, the last person imprisoned in England for alleged atheism, and the last person indicted for publishing unstamped papers in support of the Soc. for Repealing the Taxes on Knowledge. He made lecturing tours of the United States and Canada 1879 and 82, and has done more than any other man to spread the principles of co-operation. He is a vigorous critic of nearly all established institutions; and is author of numerous works on working-class education, theol. criticism, politics, and co-operation, his last including *Among the Americans*, *A Hundred Days Abroad in New Mexico and Canada*, and *Hostile and Generous Toleration*.

HOLYOKE, *hōl'yōk*: city of Hampden co., Mass., on the Connecticut river, and the Conn. River and H. and Westfield branch of the New Haven and Northampton railroads; 8 m. n. of Springfield, 9 m. s. of Northampton. It occupies an elevated site, has the river on three sides, and has grown rapidly since 1849, when a dam 1,019 ft. long was built across the river, which has a fall of 60 ft. in a m., thereby gaining great water-power. Its industries include 23 paper mills, daily product of 120 tons, the greater part of which is finest writing-paper made in the U. S.; 4 cotton, 5 woolen factories; planing, flour mills; granite and wire mills; machine-shops and brass-foundries; and manufactories of alpaca, rubber, blank-books, envelopes, imitation seal-skin, screws and cutlery. It contains a city hall (cost \$412,000), 5 nat. banks (cap. \$1,250,000), 3 savings banks, 1 private bank, 14 churches, a high and several grammar-schools, public library, water works (cost \$250,000), street railroad, gas, and electric lights, fire-alarm telegraph, Rom. Cath. convent and orphanage, and daily and weekly newspapers. It is connected with S. Hadley Falls by a free bridge. Prior to 1831 the vast water-power on which the city now depends was wholly unused. H. was then a remote border of the town of W. Springfield, inhabited chiefly by farmers. A small cotton-mill was built 1831, and some years afterward a grist-mill. These comprised the business enterprises 1847. In that year the water of the river was found to aggregate 30,000 horse-power by natural descent alone. Capital was attracted and a dam was built which was soon destroyed. In 1849, Oct., the present dam was completed, and 1868-70 a solid stone and timber apron was built directly on the face of the dam to add to its strength and durability. The water is now distributed through three canals of a total length of $3\frac{1}{2}$ m. with a capacity of 300 mills' power (each mill-power averaging 38 cubic ft. of water per second during 16 hours daily); about equalling the combined water-power of Lowell, Mass., and Manchester, N. H. H. was incorporated as a town 1850, Mar.; chartered as a city 1873, Apr. Pop. (1860) 4,997; (1870) 10,733; (1900) 45,712.

HOLYOKE, MOUNT: in Hampshire co., Mass.; between the towns of Hadley and Amherst on the n. and S. Hadley and Granby on the s.; 1 m. e. of the Conn. river, 3 m. s.e. of Northampton. Mount H. is 7 m. long; its w. extremity

HOLY PHIAL—HOLY PLACES.

is cut by the Conn. river with Mount Tom on opposite side of cleft. It is of greenstone trap, well timbered, 830 to 1,120 ft. above sea-level; has a carriage road and railway operated by a stationary engine leading to the summit of the fashionable (w.) portion, and a commodious hotel built 1821; and has been a popular resort for at least 100 years. It affords a lovely view of the winding Conn. river and the fertile fields and cosy cottages in its beautiful valley.

HOLY PHIAL (or SAINTE AMPOULE), ORDER OF: order of knighthood formerly in France, composed of four persons, usually the first in point of rank, family, and fortune in the province of Champagne, and styled *Barons de la Sainte Ampoule*. At the coronation of the French kings, they were delivered to the Dean, Priors, and Chapter of Rheims, as hostages for the fulfilment of the engagements entered into by the great officers of the crown to return the holy phial in which the coronation oil was kept, and which, according to the legend, was brought from heaven by the Holy Spirit under the form of a dove, and put into the hands of St. Remy, at the coronation of Clovis. The peculiarity of this order was that the knights were knights for only a day.

HOLY PLACES—HOLY SEPULCHRE: strictly the group of sacred places of which the Church of the Holy Sepulchre at Jerusalem is the centre, and which are supposed to comprise the sites of the chief events of our Lord's passion, death, and burial: Gethsemane, the Supper-room, the Church of the Ascension, the Tomb of the Virgin, etc. For numerous other localities to which pertain solemn memories and interesting associations, see JERUSALEM; also for the general topography of the ancient and modern city. The so-called Church of the Holy Sepulchre stands within the modern city, on the n.w. or Latin quarter. It is a Byzantine building, in the centre of a spacious inclosed court. Under the great dome of the church stands the Holy Sepulchre, of oblong form, 15 ft. by 10, surmounted by a rich ceiling, decorated with gold, silver, and precious marble. A circular hall surrounds the space beneath the dome. Around this circular hall are oratories for the Syrians, Copts, and Maronites; and above it is a series of galleries similarly appropriated. In the body of the church are the chapels of the Greek, Latin, and Armenian Christians, the church as a whole being maintained by the Ottoman authorities in the condition, as it were, of a common meeting-ground for all the Christian communions, as the rivalries of the several religious bodies constantly lead to angry controversy, and sometimes to sanguinary conflicts. Opposite the entrance of the inclosure is a somewhat elevated marble slab, called the Stone of Unction, shown as the stone on which the Lord's body was anointed before entombment; and above is an elevation approached by steps, which is the traditionary Mount Calvary, and on which now stands a rich dome-shaped building, floored with rich marbles, in the crypt of which is the cavity supposed to have been formed by the erection of the cross. The street by which

HOLYROOD.

this site is approached, from the direction of the ruins of Herod's palace, on the n. side of the city, is the principal street of the Latin quarter, and is called by the Turks *Harât-el-Albam*, and by the Christians the *Via Dolorosa*, as being the supposed route of the Lord Jesus from the hall of judgment to Calvary.

Such is the traditional view as to the locality, not only of these leading events of our Lord's history, but also of many others of minor importance. For a long course of ages, the Christian world unhesitatingly acquiesced in this view of the topography of the Holy Places; but since the beginning of the 18th c. doubts have been entertained as to its correctness; and in late years, the question has been discussed with much learning, though with little conclusive result. About 1730, a German, named Korte, who had visited Jerusalem, and explored the locality, published a work, calling the authenticity of the received system of sacred topography into question. The doubts expressed by him have been repeated at intervals ever since his day, especially by the celebrated American critic, Dr. Edward Robinson, author of *Biblical Researches in Palestine*, who may be said, in two successive investigations, to have exhausted the evidence, on one side of the question, at least so far as the remains of the ancient city had at that time been explored. Dr. Robinson distinctly affirms the impossibility of reconciling the received sacred localities with the plain requirements of the gospel history, but he fails himself to point out a scheme of topography which may be substituted for that which has been traditionally received. More recent critics, especially James Ferguson, in an *Essay on the Ancient Topography of Jerusalem*, agreeing with Dr. Robinson in rejecting the received topography, contends against him that the true site of the Holy Sepulchre can be accurately determined, and that it is no other than the Mosque of Omar, or, as the Mohammedans call it, the 'Dome of the Rock.' This he holds to be the identical church which Constantine erected over the rock which contained the tomb of our Lord. Dr. Stanley, a late biblical traveller in Palestine, left the question undecided. For chief authorities, see on one side, Robinson's *Biblical Researches in Palestine*; Smith's *Dictionary of the Bible*, article 'Jerusalem' (Ferguson); *Essay on the Ancient Topography of Jerusalem*, by the same author. See the other side, Williams's *Holy City*; Raumer's *Beiträge zur Bibl. Geographie*; Sepp's *Forschungen eines Deutschen Reisenden in Jerusalem*; Schaffter's *Aechte Lage des heiligen Grabes*. Under the auspices of the Palestine Exploration Fund, diligent researches are now being made at Jerusalem, and several important discoveries have been announced. See an account of the excavations in *Underground Jerusalem*, by Capt. Warren, R.E. (London 1876).

HOLYROOD, *hō'li-rôd*: the ancient royal palace and precincts at Edinburgh. In 1128, King David I. of Scotland founded at Edinburgh an abbey of canons regular, of the order of St. Augustine. It was dedicated in honor of the Holy Cross or Rood, which was brought to Scotland

HOLYROOD.

by St. Margaret about 1070 and became one of the heir-looms of the kingdom. The BLACK ROOD OF SCOTLAND (q.v.), as it was called, fell into the hands of the English at the battle of Neville's Cross 1346, and as its history passed from remembrance, a fable sprang up telling how King David was prevailed upon by his young nobles to go hunting on the solemn festival, by which the church yearly commemorated the finding of the Holy Cross at Jerusalem; how the chase lay through the forest, which in those days encircled Arthur Seat, and stretched almost to the gates of Edinburgh; how the king, in pursuit of a wild hart, outrode all his companions; how at the foot of Salisbury Crag the hart turned to bay, and overthrew the king's horse; how as it rushed at the king, threatening him with instant death, a cross, as if from between its antlers, miraculously slid into the king's hands; how at the sight of it the hart fled and vanished; and how the king, warned by a vision in his sleep, resolved to build a monastery in honor of the Holy Rood on the spot where his life had been so preternaturally saved. When this legend was invented, apparently about 1420, it had been forgotten that the first site of the abbey was not at the foot of Salisbury Crag, but within the walls of the castle, whence it was not finally removed until after 1174, to the eastern extremity of the Canongate, as the little burgh came to be called, which the canons erected between their abbey and the king's burgh of Edinburgh. The abbey was burned by the English 1385, 1544, and 1547. Before it could be restored after these last conflagrations, the Reformation arrived, when the ruins of the choir and transepts were taken down to repair the nave. This was used as the parish church of the Canongate from about 1560 till 1672, when it was turned into the chapel-royal. In 1687, King James VII., having built another parish church for the Canongate, set the nave of the abbey church apart for the Rom. Cath. service, and had it fitted up with stalls for the Knights of the Thistle. It was plundered and burned by the mob at the Revolution 1688, and remained in neglect until 1758. In that year it was repaired and roofed, but the roof was too heavy for the walls, and it fell 1768, crushing the pillars of the n. aisle, and otherwise injuring the building.

The abbey of H. early became the occasional abode of the Scottish kings. John Balliol held a parliament within its walls 1295. James II. was born in it, crowned in it, married in it, buried in it. The foundations of a palace, apart from the abbey, were laid by James IV., whose splendid nuptials with the Princess Margaret of England were celebrated here 1503. Edinburgh had now become the acknowledged capital of Scotland, and H. henceforth was the chief seat of the Scottish sovereigns. Queen Mary took up her abode in the palace when she returned from France 1561. Here, 1566, Rizzio was torn from her side, and murdered. Her son, King James VI., dwelt much in H. before his accession to the throne of England 1603. He revisited it 1617. It was garrisoned by Cromwell's troops after the battle of Dunbar 1650. when the greater part of

HOLY SEPULCHRE.

It was burned down. It was rebuilt by King Charles II., from the designs of Sir William Bruce of Kinross 1671-79. In 1745,6 it was occupied in succession by Prince Charles Edward, and by the Duke of Cumberland. It sheltered the Count d'Artois (afterward King Charles X. of France) 1795-99, and again 1831-35. King George IV. held his court in it 1822. Since that time much has been done to make it a suitable residence for the sovereign, and Queen Victoria has occasionally made a short stay here.

The oldest part of the palace is the n.w. tower, founded by King James IV. about 1500, and completed by his son, King James V., who died 1542. It was somewhat modernized 1671-79; and the roofs, if not the floors also, were renewed by King Charles I. (1625-49), whose cipher they bear; but otherwise the disposition of the rooms seems to be much the same as in the days of Queen Mary. It need scarcely be added, that the furniture is much more recent, and that the articles shown as relics of Mary and her court are wholly spurious.

The palace, with its precincts and park, is a sanctuary for debtors. In England, the same privilege extends to royal palaces to this extent, that no writ of legal process can be executed within their bounds; but this practically is only a protection to the servants of the palace; and no means exist for insolvent persons taking lodgings in a privileged place there or elsewhere, and avoiding imprisonment, in so systematic a way as is competent to residents within the precincts of Holyrood Palace, where there is ample accommodation. The precincts comprehend the adjoining park and the hills of Arthur's Seat and Salisbury Crag. Refugee debtors must procure a certificate of protection within 24 hours from the proper official within the bounds. Taking refuge within the sanctuary is considered disreputable, and from this cause, as well as from recent meliorations in the laws affecting debtors, the practice has greatly fallen off. It is to be added, that the sanctuary of Holyrood shelters debtors to the crown.

HOLY SEPULCHRE, KNIGHTS OF THE: order of knighthood instituted, probably by Pope Alexander VI., for the guardianship of the Holy Sepulchre, and the relief and protection of pilgrims. The pope was originally the grand-master, but he subsequently ceded his rights to the Guardian Father of the Holy Sepulchre. The knights must, by the rules of the order, all be of noble descent; they were bound to hear mass daily, to fight, to live, and to die for the Christian faith, etc. In return for these duties, the knights had the most unusual and extraordinary privileges conferred on them: they were exempt from taxation, could marry, and yet possess church property, legitimize bastards, and cut down and bury the bodies of criminals who had been hanged. On the recapture of Jerusalem by the Turks the knights retired to Italy, and settled at Perugia. After a temporary union with the Hospitallers, the order was reconstructed 1814 both in France and in Poland, and is still in existence within a very small circle of knights elected by the Guardian Father

HOLY SPIRIT—HOLY WATER.

from the most respectable pilgrims who come to Jerusalem.

HOLY SPIRIT, or HOLY GHOST: in Orthodox Theology the third personal distinction in the Divine Trinity (q.v.), proceeding from the Father and the Son, yet of one substance, majesty, and glory with the Father and the Son, very and eternal God. His distinct personality is believed to be attested by a multitude of passages in Scripture. One may suffice as specimen: 'But when the Comforter is come, whom I will send unto you from the Father, even the Spirit of truth, which proceedeth from the Father, he shall bear witness of me' (John xv. 26). The 'Procession' (q.v.) of the Spirit is the subject of one of the chief differences between the Eastern and the Western or Latin churches. He is essentially a spirit of holiness, and his grand function is to apply to the hearts of men the benefits of Christ's death, to work in them, first, a belief of the truth as it is in Jesus, and then to sanctify them by that truth.

HOLY WATER: in the Rom. Cath., as also in the Greek, Russian, and Oriental churches, water blessed by a priest or bishop for certain religious uses. Water is a fitting natural symbol of purity; and accordingly, in most of the ancient religions, the use of lustral or purifying water not only formed part of the public worship, but also entered largely into the personal acts of sanctification prescribed to individuals. The Jewish law contained many provisions to the same effect; and the Lord Jesus, by establishing baptism with water as the necessary form of initiation into Christian discipleship, gave his sanction to the use, which, from its universal acceptance among mankind, appears to be a relic of the primeval natural revelation. The usage of sprinkling the hands and face with water before entering the sanctuary, prescribed in the Jewish law, was retained, or at least very early adopted, in the Christian church. It is expressly mentioned by Tertullian in the end of the 2d c. And that the water so employed was blessed by the priests we learn, among others, from St. Jerome, and from the apostolical constitutions. Although it is difficult to fix the precise time, it cannot be doubted that the practice of mingling salt with the water is of very ancient origin (see Canon 20, *De Consecr. Dist. iii.*). In the Western Church, there is a solemn blessing of water in the service of Holy Saturday, but the ceremonial is repeated by the priest whenever it may be necessary to replenish the fountain. Instructed Rom. Catholics regard the use of holy water chiefly as a means of suggesting to the mind the necessity of internal purity; and though it is supposed to derive from the blessing a special efficacy for this end, yet this efficacy is held to be mainly subjective and of a character entirely distinct from that ascribed to the sacramental rites of the church. In the reformed churches, the use of holy water is regarded as unscriptural and superstitious.

HOLY WEEK.

HO'LY WEEK: week immediately preceding Easter, and specially consecrated to the commemoration of the Passion of our Redeemer. In English (and popularly in American) use, it is called also 'Passion Week'; but that name is appropriated, in Roman use, to the week before Palm Sunday. This institution is of very early origin, and the name Holy Week is but one of many by which its sacred character has been described. It was also called the 'Great Week,' the 'Silent Week,' the 'Week of the Holy Passion,' the 'Vacant Week,' the 'Penitential Week.' In the Rom. Cath. Church, the special characteristics of the celebration of Holy Week are increased solemnity and gloom, penitential rigor, and mourning. If any of the ordinary church festivals fall therein, it is transferred till after Easter. All instrumental music is suspended in the churches, the altars are stripped of their ornaments, the pictures and statues are veiled from public sight; manual labor, though it is no longer entirely prohibited, is by many persons voluntarily suspended; the rigor of fasting is redoubled, and alms-deeds and other works of mercy sedulously enjoined and practiced. All church services of the week, moreover, breathe the spirit of mourning, some being devoted specially to the commemoration of particular scenes in the Passion of the Lord Jesus. The days thus specially solemnized are Palm Sunday, Spy Wednesday, Holy (or Maundy) Thursday, Good Friday (q.v.), Holy Saturday. Holy Thursday (called also Maundy Thursday, from *Mandatum*, the first word in one of the church services of the day), in the Rom. Cath. Church is specially designed as a commemoration of the Last Supper, and of the institution of the Eucharist. But there are several other services annexed to the day, as the solemn consecration of the oil or chrism used in baptism, confirmation, orders, and extreme unction, the washing of pilgrims' feet, and the tenebræ. To Holy Saturday belongs the solemn blessing of fire and of the water of the baptismal font; and from earliest times, it was set apart for the baptism of catechumens, and for the ordination of candidates for the ecclesiastical ministry. From the fire solemnly blessed on this day is lighted the Pascal Light, which is regarded as a symbol of Christ risen from the dead. This symbolical light is kept burning during the reading of the gospel at mass throughout the interval between Easter and Pentecost. See Wetser's *Kirchen-Lexicon*, art. 'Charwoche.' It must be added, however, that in many instances the primitive institution of the Holy Week was perverted, and that the suspension of labor, originally designed for purposes of devotion and recollection, was turned into an occasion of amusement frequently of very questionable character. Such abuses are now universally discountenanced by the ecclesiastical authorities.

In the Prot. communions, there is no special solemnization of the Holy Week, with the exception of Good Friday (q.v.), which is observed in some of them, and whose observance is extending.

HOLYWELL.

HOLYWELL, *hŏl'î-wĕl* (Welsh *Treffynnon*): parliamentary borough and market-town of n. Wales, county of Flint. It is the centre of an immensely valuable mineral district, and is the seat of numerous establishments for lead and copper smelting, manufacturing shot, zinc, etc. There are also manufactures of cottons, flannels, and paper. Coal and lead mines are worked. Pop. (1881) 11,329; (1895) 9,454.

H. is now one of the most important and flourishing towns of N. Wales. It owes its origin to the renowned Well of St. Winifred, which is estimated to deliver 21 tons of water per minute, and is said to be the most copious spring in Britain. Its waters were formerly believed to be efficacious in curing diseases, and were visited by great numbers of pilgrims.

HOMAGE, n. *hŏm'āj* [F. *hommage*, homage, duty—from Prov. *homenatge*—from mid. L. *hominātīcum*, feudal homage—from L. *homo*, a man]: in feudal times, the service or fealty promised by a knight or vassal to his lord or superior, as his lord's *man*; the act of giving the promise. The word is derived from the form of expression used in doing the service, which was—*jeo deveigne vostre home*—I become your man. Since the abolition of tenures, the word has no substantial legal meaning in the law of England, except in a limited sense as to copyholds, to denote the kind of acknowledgment made by a tenant to the lord of the manor. *Homagium reddere* was the expression, now obsolete, signifying a solemn renunciation of homage or fealty to the lord, and a defiance of him. The word denotes also in general, respect paid by outward action; reverential worship; devout affection; recognition of superiority.—**SYN.**: fealty court; submission; reverence; honor; respect; regard; deference; obeisance.

HOMALONOTUS, n. *hŏm'ă-lŏ-nŏ'tŭs* [Gr. *homālos*, on the same level; *nōtos*, the back]: in *geol.*, a genus of trilobites.

HOMALOPSIDÆ: family of colubrine serpents, of the group *Suspecta*; comprising several genera, of which some are N. American; characterized by flat spaces on the head and abdomen. They inhabit the rivers of southern Asia.

HOMALOPTERA, *hŏm-a-lŏp'tēr-a* [Gr. level-winged]: name given by some entomologists to a small order of insects, more generally regarded as a division of the order *Diptera*. The H. have been called also **PUPIPARA**, from the remarkable circumstance that the larvæ are hatched within the body of the mother, and remain there till they have passed into the pupa state. Some of the H. are wingless. Examples of this order are found in the forest fly (q.v.), and in those extraordinary parasites of bats called *Nycteribia*. All the H. are parasites.

HOMBRE, n. *hŏm'bēr*: another spelling of **OMBRE**, which see.

HOMBURG - VOR - DER - HOHE, *hŏm'bŭrg - vor - dĕr - hŏ'ĕh*: pleasant little town in the province of Hesse-Nassau, Ger-

HOME.

many, at the foot of the Taunus Mountains, nine m. n.w. of Frankfurt-on-the-Maine. It has beautiful environs, and is much frequented for its mineral waters and, until recently, its gambling-saloons. The waters are considered very effective in cases of disordered liver and stomach. They are five in number, and one of them, the *Elizabeth*, contains more carbonic acid than any saline spa known. About 400,000 bottles of the 'waters' of H. are annually sent away. Pop. (1871) 8,626; (1890) 8,863.

HOME, n. *hōm* [AS. *ham*; Goth. *haims*; F. *hameau*, a village, a dwelling; Icel. *heimr*, an abode; *heima*, home]: a dwelling-house; an abode; one's own country: ADJ. domestic; produced at home or in one's own country; close or severe, as a home-thrust: AD. to one's own habitation or country; close to our own breast or affairs; to the utmost; fully; closely: *home* is used of anything close in its place—applied to the sheets of the sails, to the shot in a gun, etc. HOME'LY, a. -*li*, plain; not handsome; not polished; easy and plain in manners: AD. in a homely manner. HOME'LINESS, n. -*nēs*, want of beauty; plainness; want of polished manners. HOME'LESS, a. without a home. HOME'LESSNESS, n. state of being without a home. AT HOME, at one's own place of abode. AT HOME IN ANYTHING, conversant or familiar with. HOME-BORN, native; not foreign. HOME-BOUND, or HOMEWARD-BOUND, on the way to one's abode or native country, particularly by sea. HOME-BRED, native; plain; uncultivated. HOME-BREWED, brewed at home, as beer or ale. HOME FARM, the cultivated fields around a mansion-house and grounds—frequently kept in the proprietor's own hands. HOME-MADE, of domestic manufacture. HOME OFFICE, the department of government which has direct control over all matters relating to the internal affairs of Great Britain and Ireland. HOME SECRETARY, in *Britain*, one of the high officers of state to whom is intrusted the management of affairs connected with the civil jurisdiction of the kingdom. HOME'SICK, a. pining after one's native place or home. HOME'SICKNESS, n. HOME-SPUN, a. wrought at home; plain in manner or style; not elegant: N. a coarse, rude, untaught, person. HOMESTEAD, n. [*home*, and *stead*]: the ground on which a house stands, and the inclosed ground surrounding it. HOME'WARD, or HOME'WARDS, ad. in the direction of, or toward home. TO BRING A THING HOME, to prove guilty; to convict. TO COME HOME, to remember with sorrow; to recoil upon as a punishment; to convict. TO DRIVE A NAIL HOME, to advance a reason or argument which cannot be resisted.—SYN. of 'home': residence; house; dwelling; tenement; the seat; country;—of 'homespun': native; plain; coarse; rude; homely; inelegant.

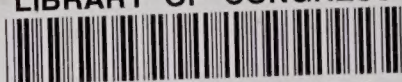
HOME, *hōm*, DANIEL DOUGLAS: 1833, Mar. 20—1886, June 21; b. near Edinburgh, Scotland: spiritualist. He was brought to the United States 1840: became known as a spiritualistic medium 1850; resided several years in Lebanon, Conn., Springfield, Mass., and Newburg and Troy,

HOME.

N. Y.; studied medicine in New York 1853; removed to London 1855, whence he made frequent visits to Russia, Germany, Italy, and France, and gave remarkable manifestations before the courts and most eminent people; was twice married to Russian ladies of rank and wealth; and published *Incidents of My Life*. The elder Dumas, Prof. William Crookes, and Victorien Sardou investigated his alleged phenomena and publicly pronounced them free from trickery; and Elizabeth Barrett Browning, Mary Howitt, and Mrs. Samuel C. Hall were among his intimates. Alexander II., Napoleon III., and Eugenie, and Queen Victoria were numbered among his reputed private patrons; yet many believed him a shrewd impostor.

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